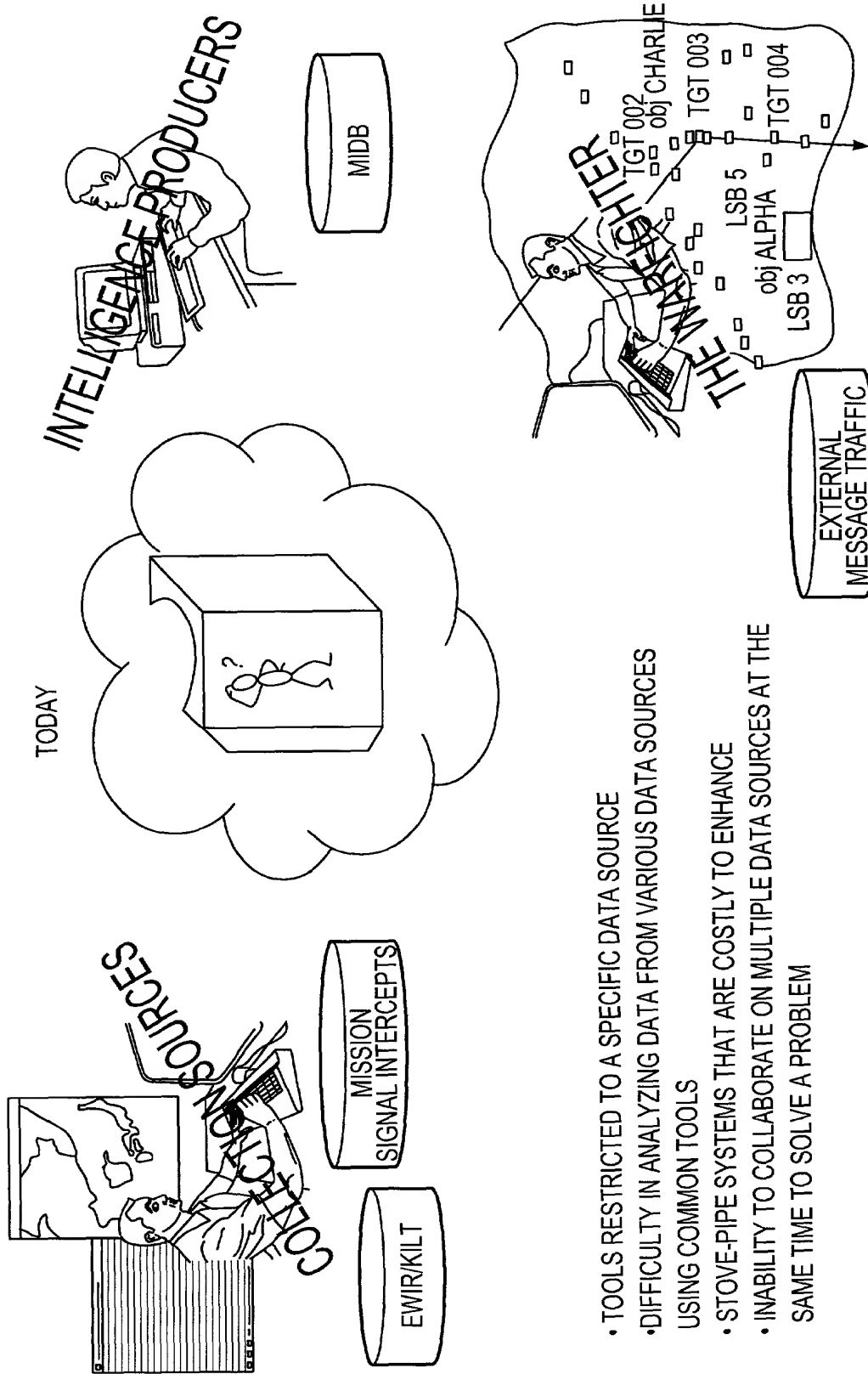


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- TOOLS RESTRICTED TO A SPECIFIC DATA SOURCE
- DIFFICULTY IN ANALYZING DATA FROM VARIOUS DATA SOURCES USING COMMON TOOLS
- STOVE-PIPE SYSTEMS THAT ARE COSTLY TO ENHANCE
- INABILITY TO COLLABORATE ON MULTIPLE DATA SOURCES AT THE SAME TIME TO SOLVE A PROBLEM

FIG.1

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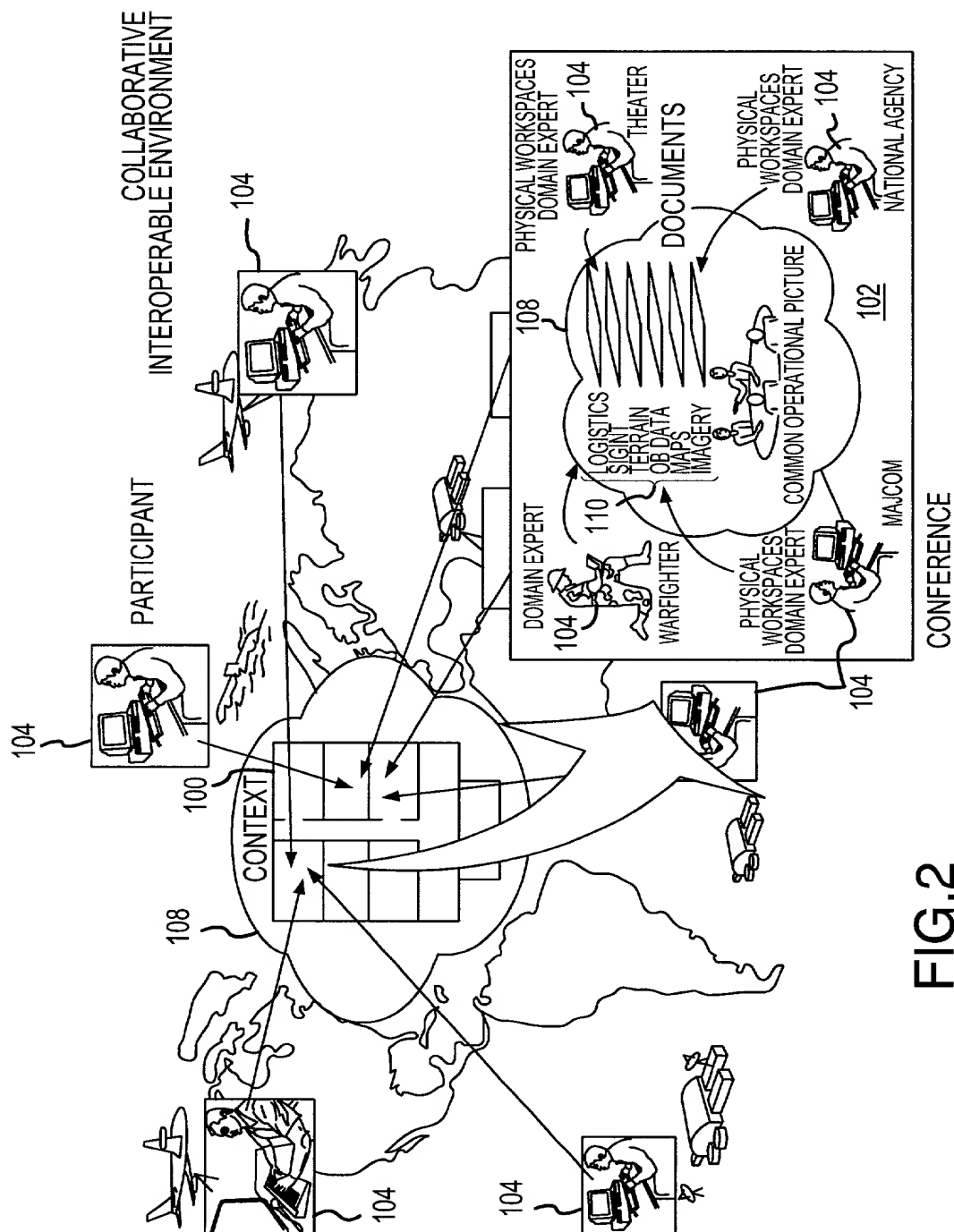
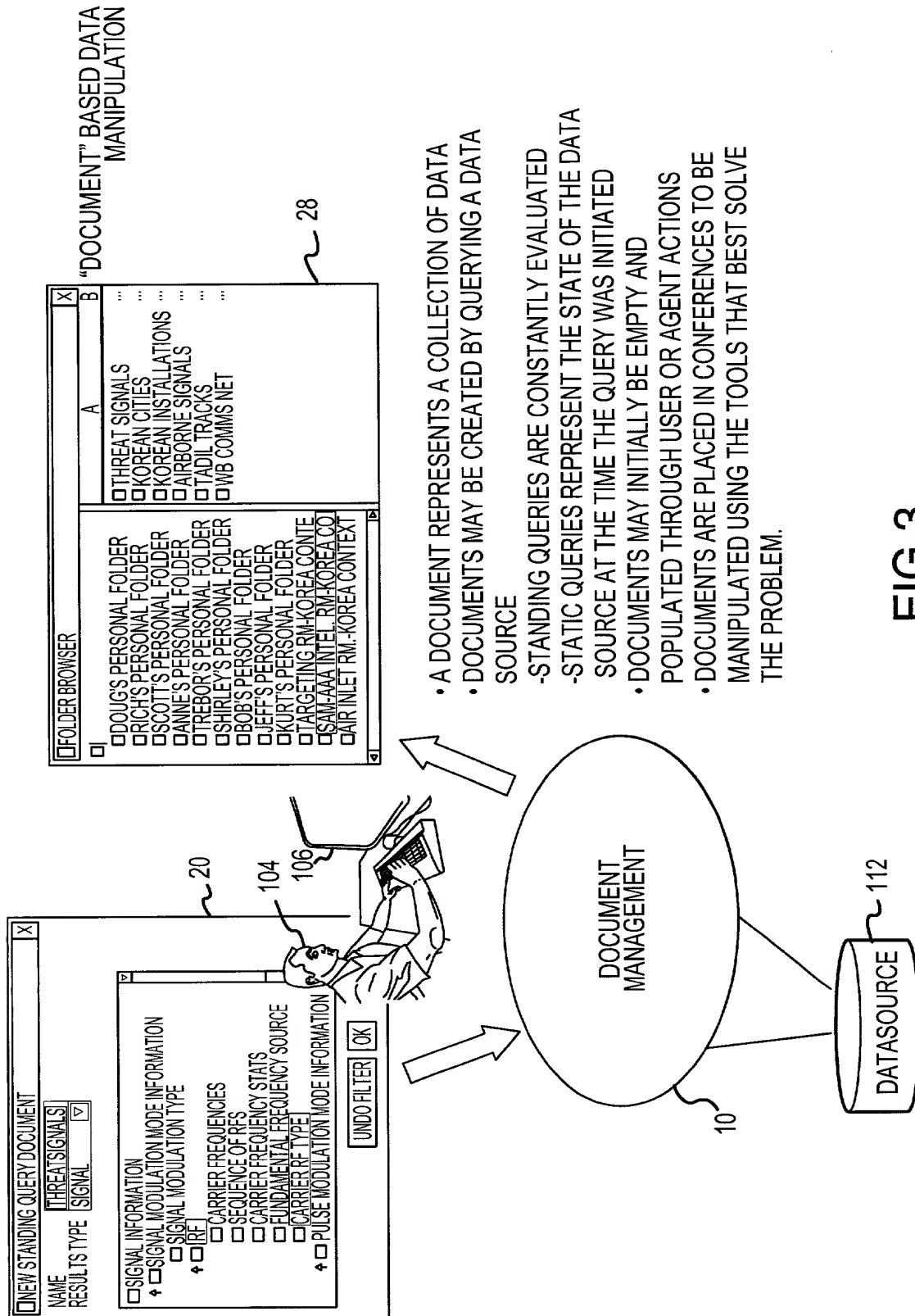


FIG.2

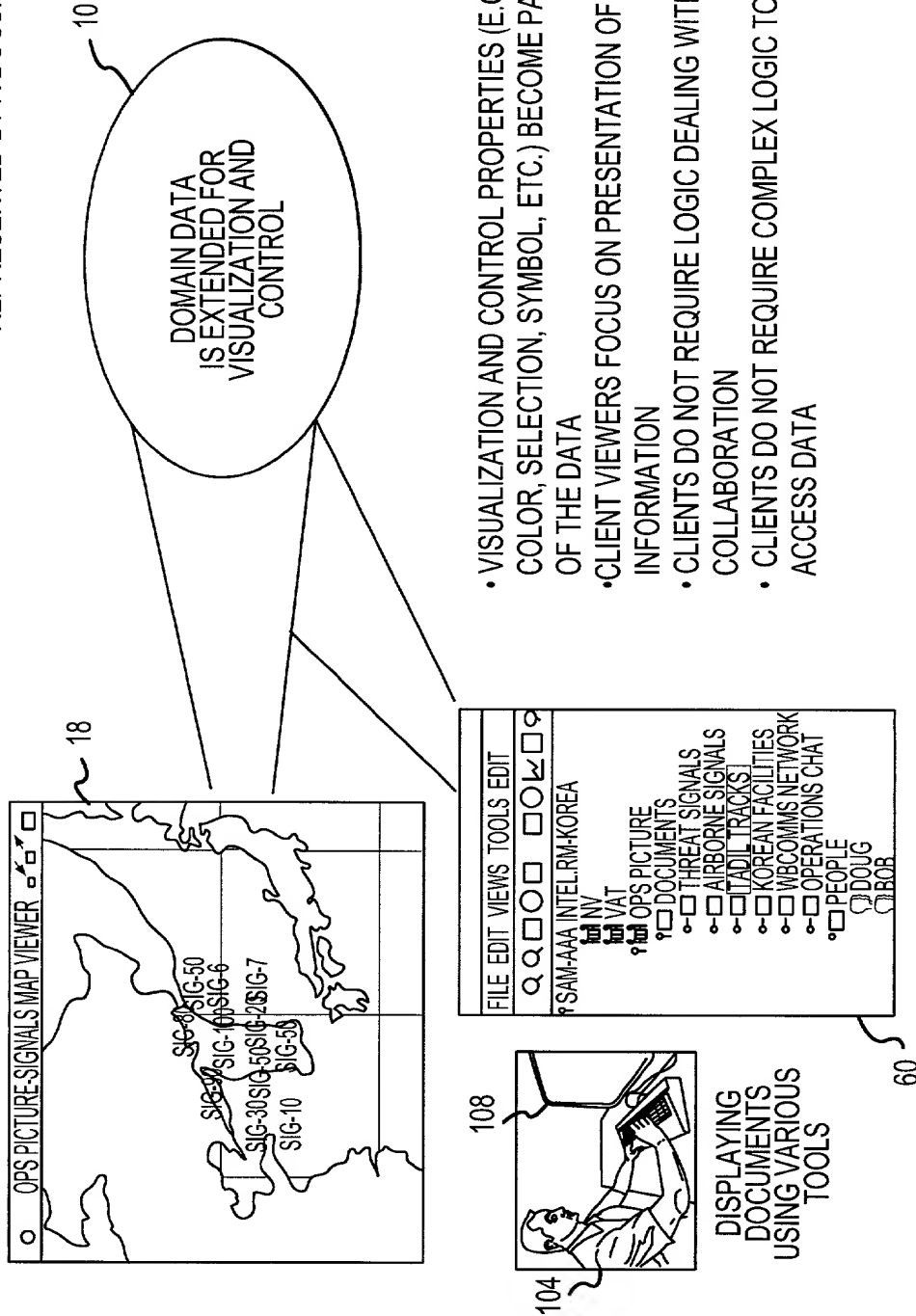
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- A DOCUMENT REPRESENTS A COLLECTION OF DATA
- DOCUMENTS MAY BE CREATED BY QUERYING A DATA SOURCE
- STANDING QUERIES ARE CONSTANTLY EVALUATED
- STATIC QUERIES REPRESENT THE STATE OF THE DATA SOURCE AT THE TIME THE QUERY WAS INITIATED
- DOCUMENTS MAY INITIALLY BE EMPTY AND POPULATED THROUGH USER OR AGENT ACTIONS
- DOCUMENTS ARE PLACED IN CONFERENCES TO BE MANIPULATED USING THE TOOLS THAT BEST SOLVE THE PROBLEM.

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THIN CLIENTS INTERACT WITH DATA
 REPRESENTED BY A DOCUMENT

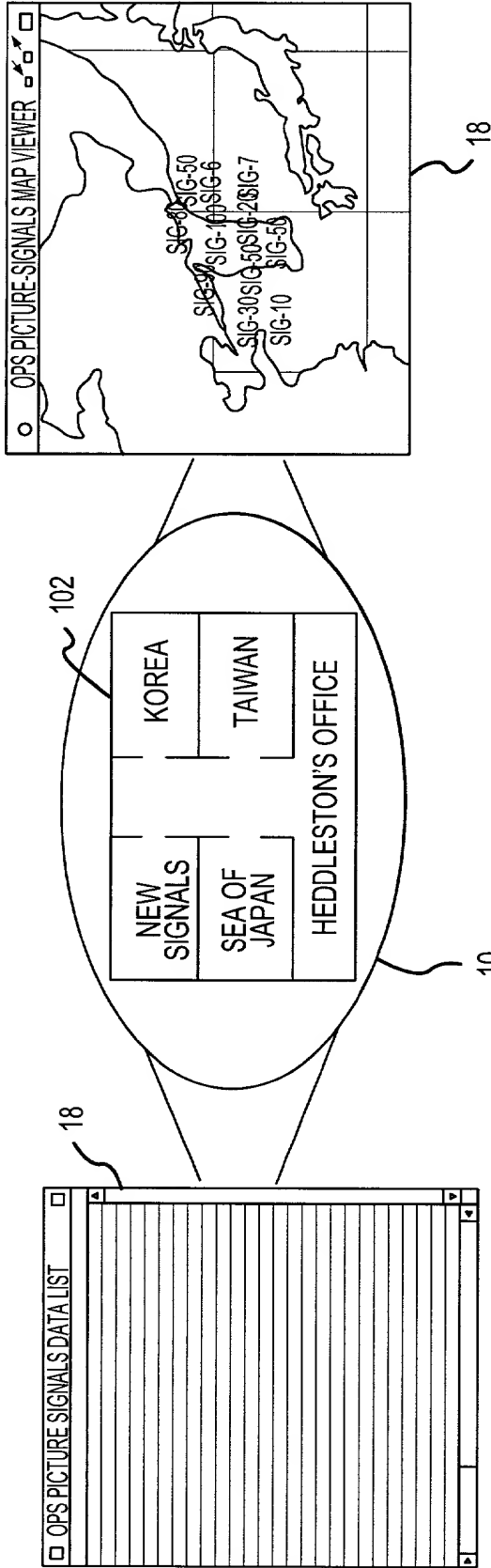


- VISUALIZATION AND CONTROL PROPERTIES (E.G., COLOR, SELECTION, SYMBOL, ETC.) BECOME PART OF THE DATA
- CLIENT VIEWERS FOCUS ON PRESENTATION OF INFORMATION
- CLIENTS DO NOT REQUIRE LOGIC DEALING WITH COLLABORATION
- CLIENTS DO NOT REQUIRE COMPLEX LOGIC TO ACCESS DATA

FIG.4

FIG. 5

COLLABORATION ON MULTIPLE VIEWS



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- SINGLE USER COLLABORATION
- MULTIPLE TOOLS IN THE SAME CONFERENCE COORDINATE VISUALIZATION (E.G. HIGHLIGHT, COLOR)
- ALL TOOLS IN A CONFERENCE COOPERATE FOR PROBLEM SOLVING
- NO TOOL-TO-TOOL COMMUNICATION

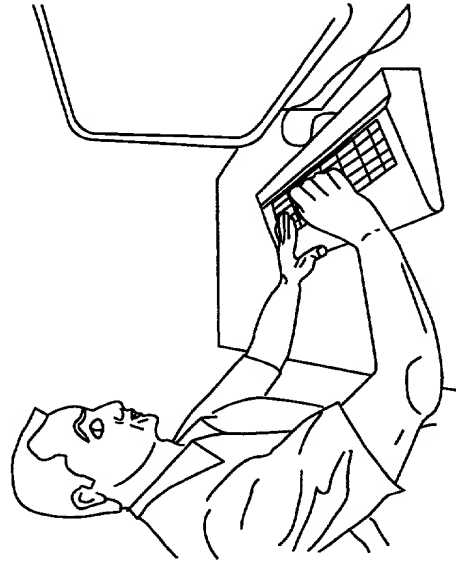


FIG.5

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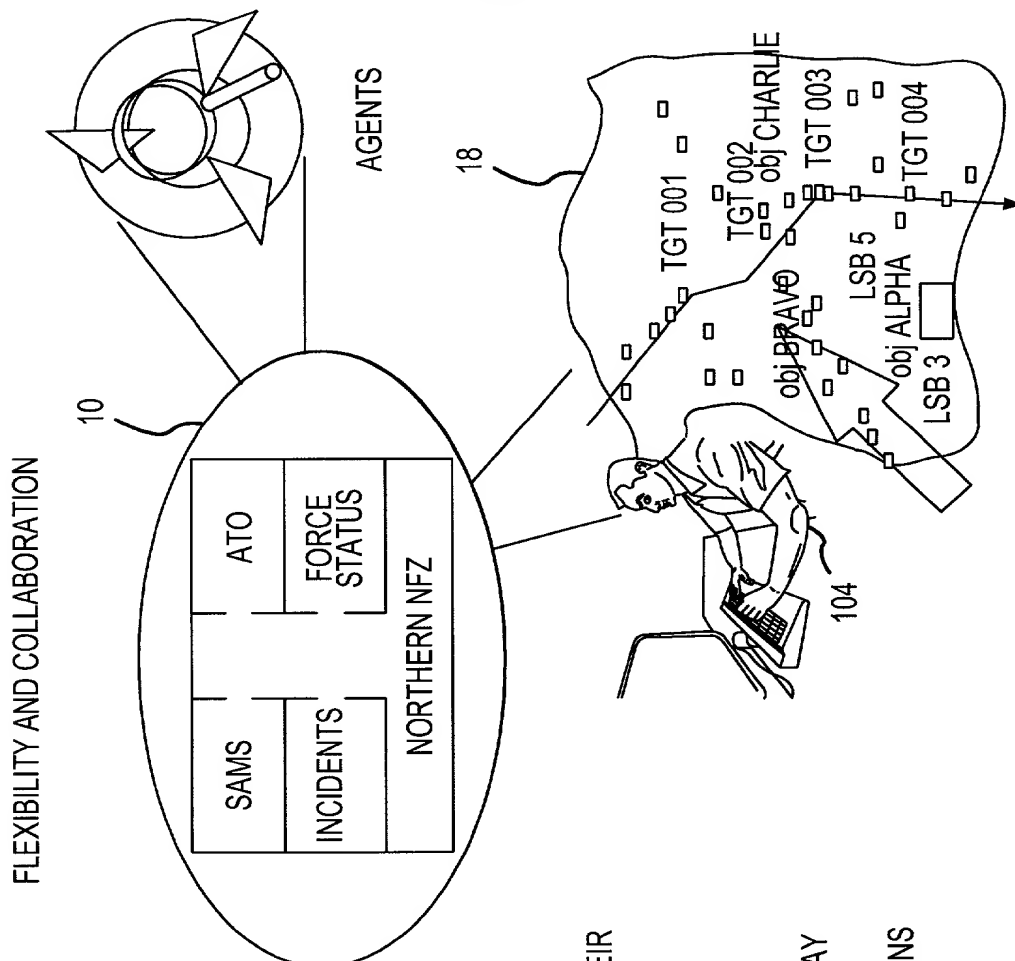


FIG.6

- FRAMEWORK PROVIDES INHERENT MULTI-USER COLLABORATION CAPABILITY
- ANALYSTS NEED DIFFERENT TOOLS TO PERFORM THEIR DUTIES. FRAMEWORK SUPPORTS COLLABORATION BETWEEN THEM
- NO SEPARATE "PASTE TO WHITEBOARD" ACTION NEEDED FOR COLLABORATION
- COLLABORATION BOUNDARY IS THE PLACE, WHICH MAY CONTAIN ONE OR MORE CONFERENCES
- COLLABORATORS MAY BE AGENTS AS WELL AS HUMANS

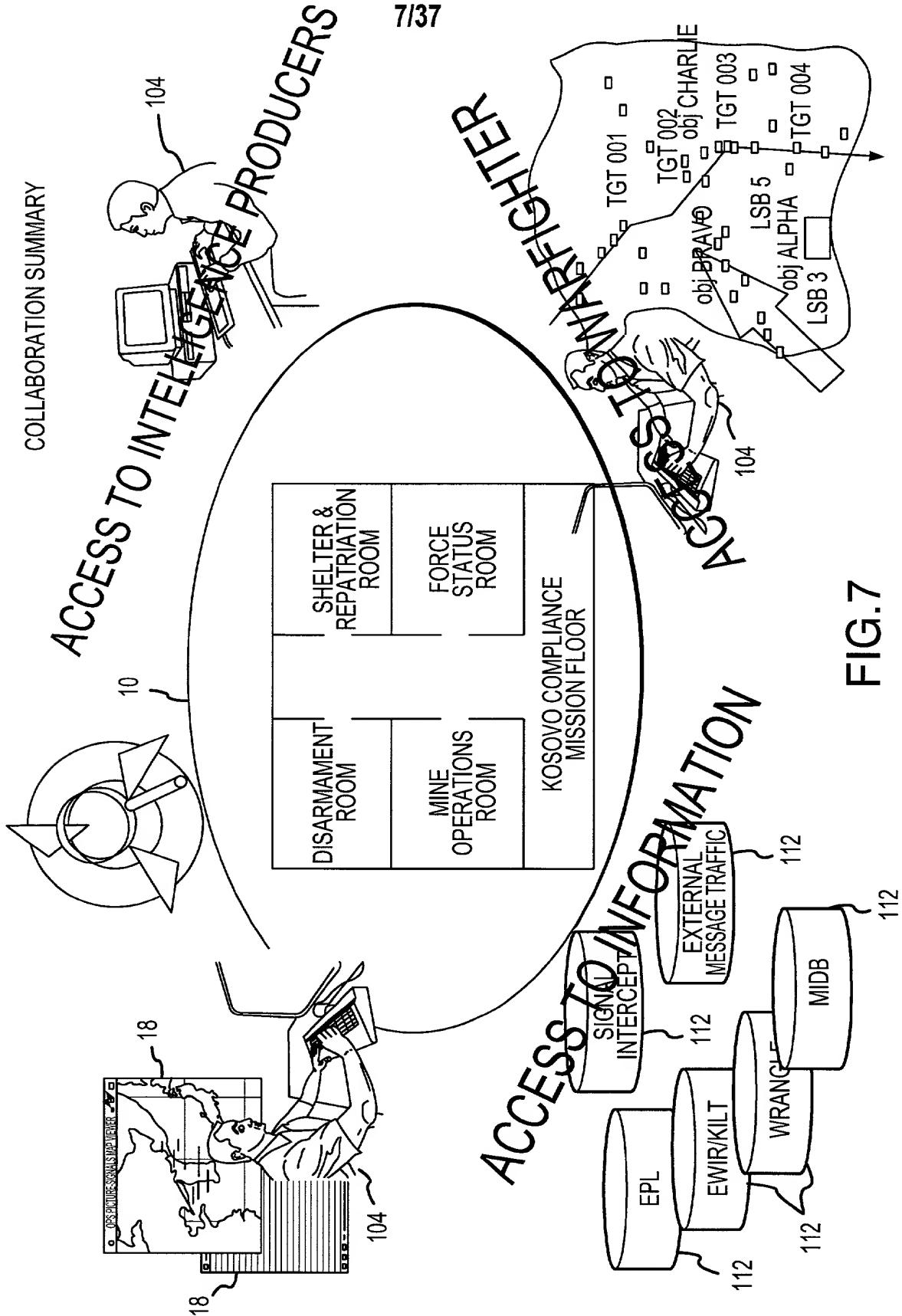


FIG.7

ARCHITECTURAL STRATEGY

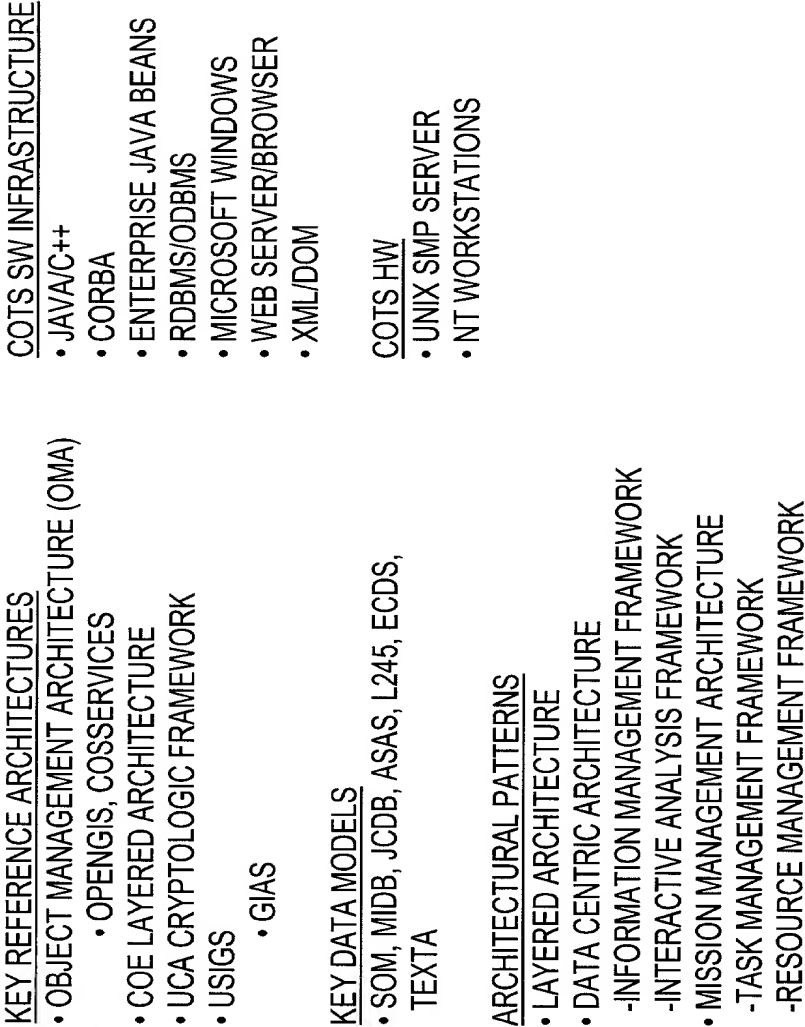


FIG.8

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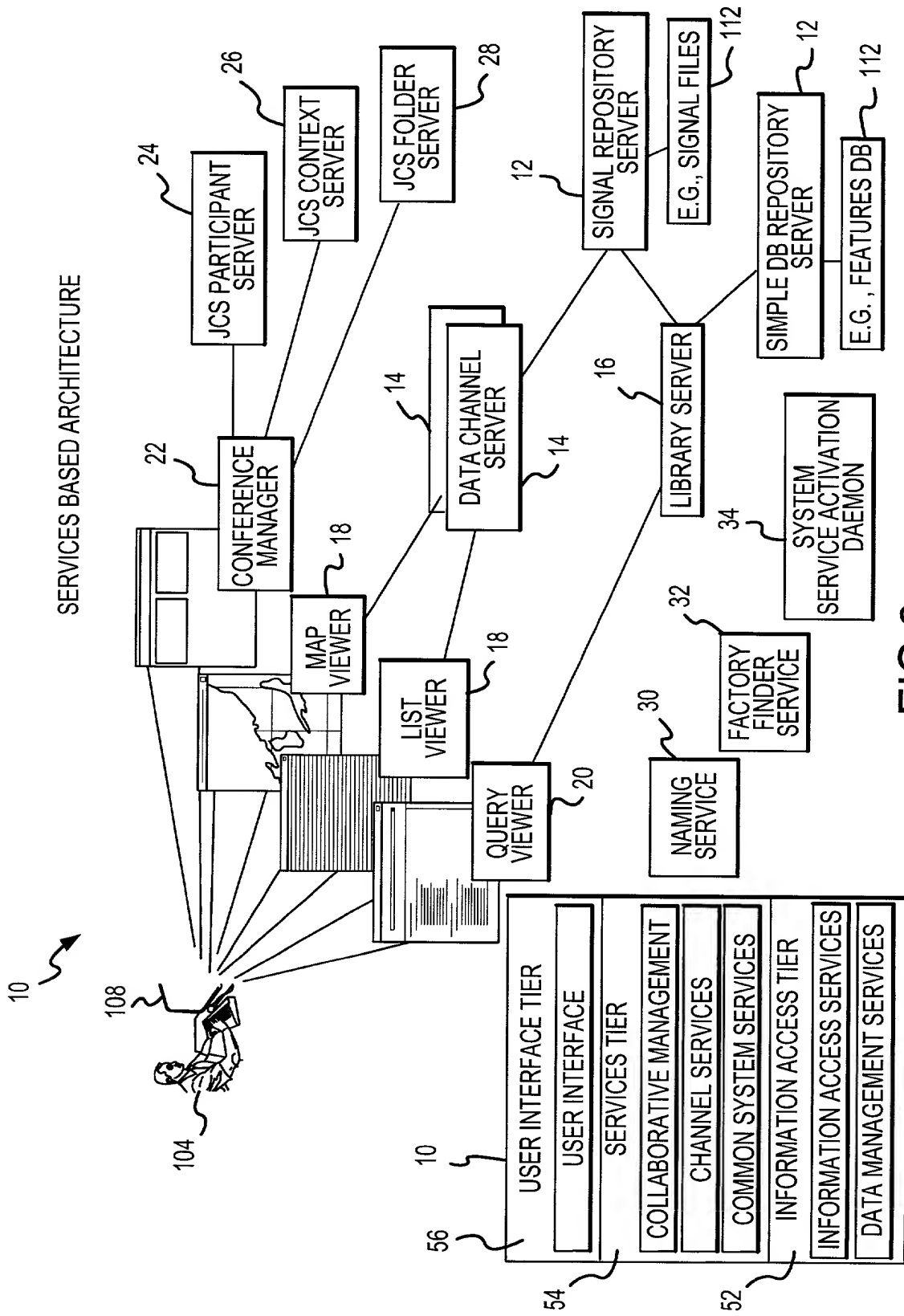
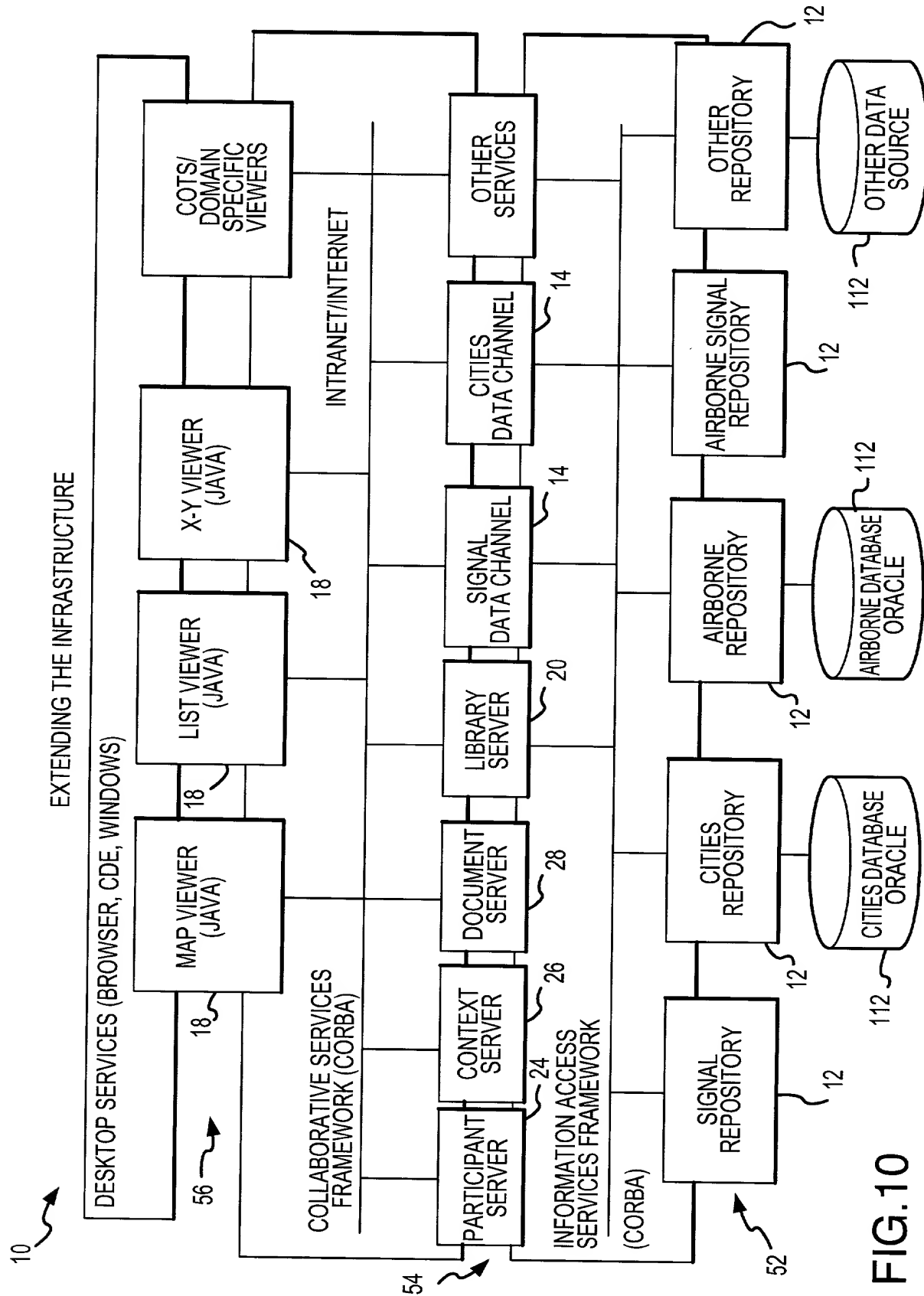


FIG. 9

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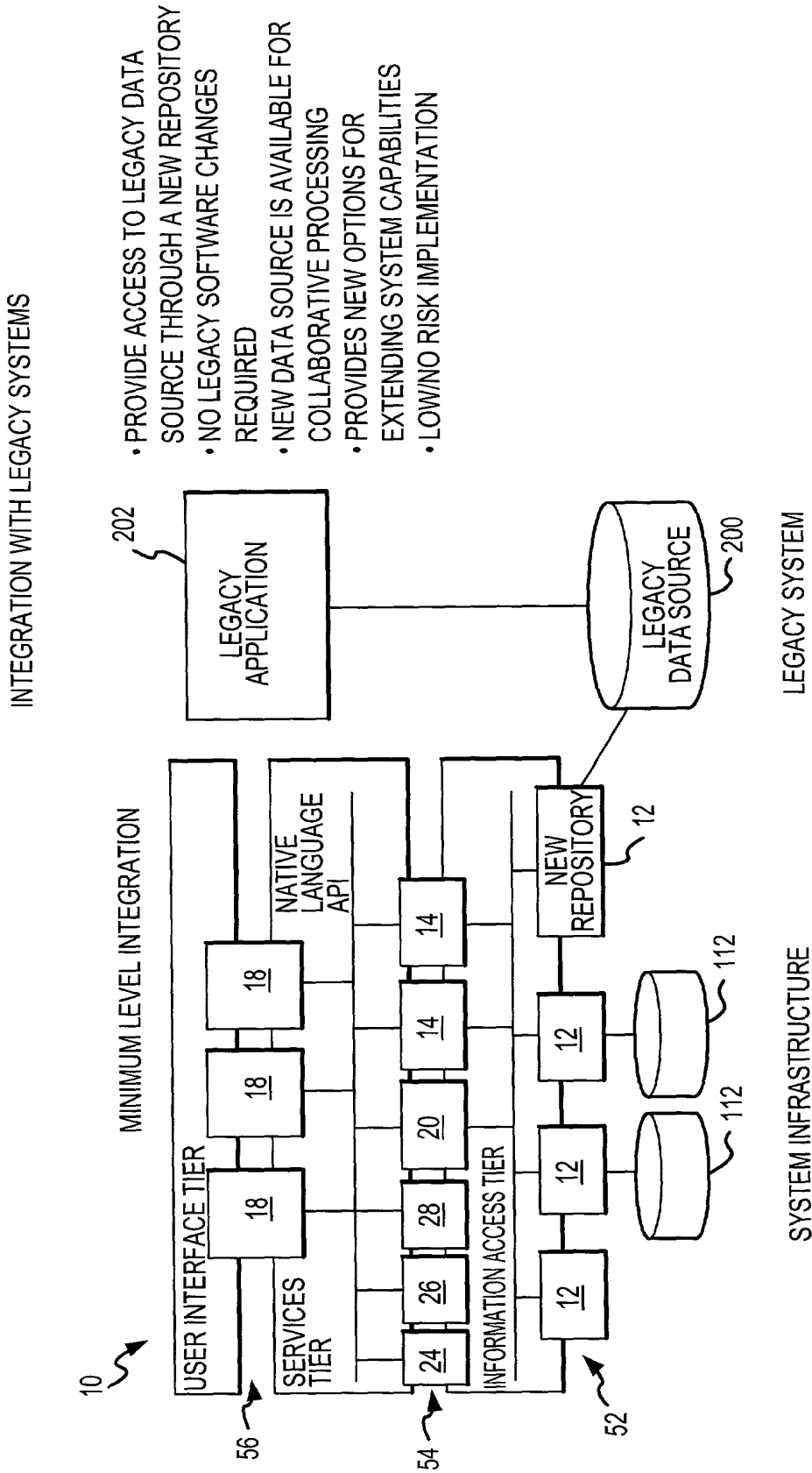


FIG.11

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INTEGRATION WITH LEGACY SYSTEMS

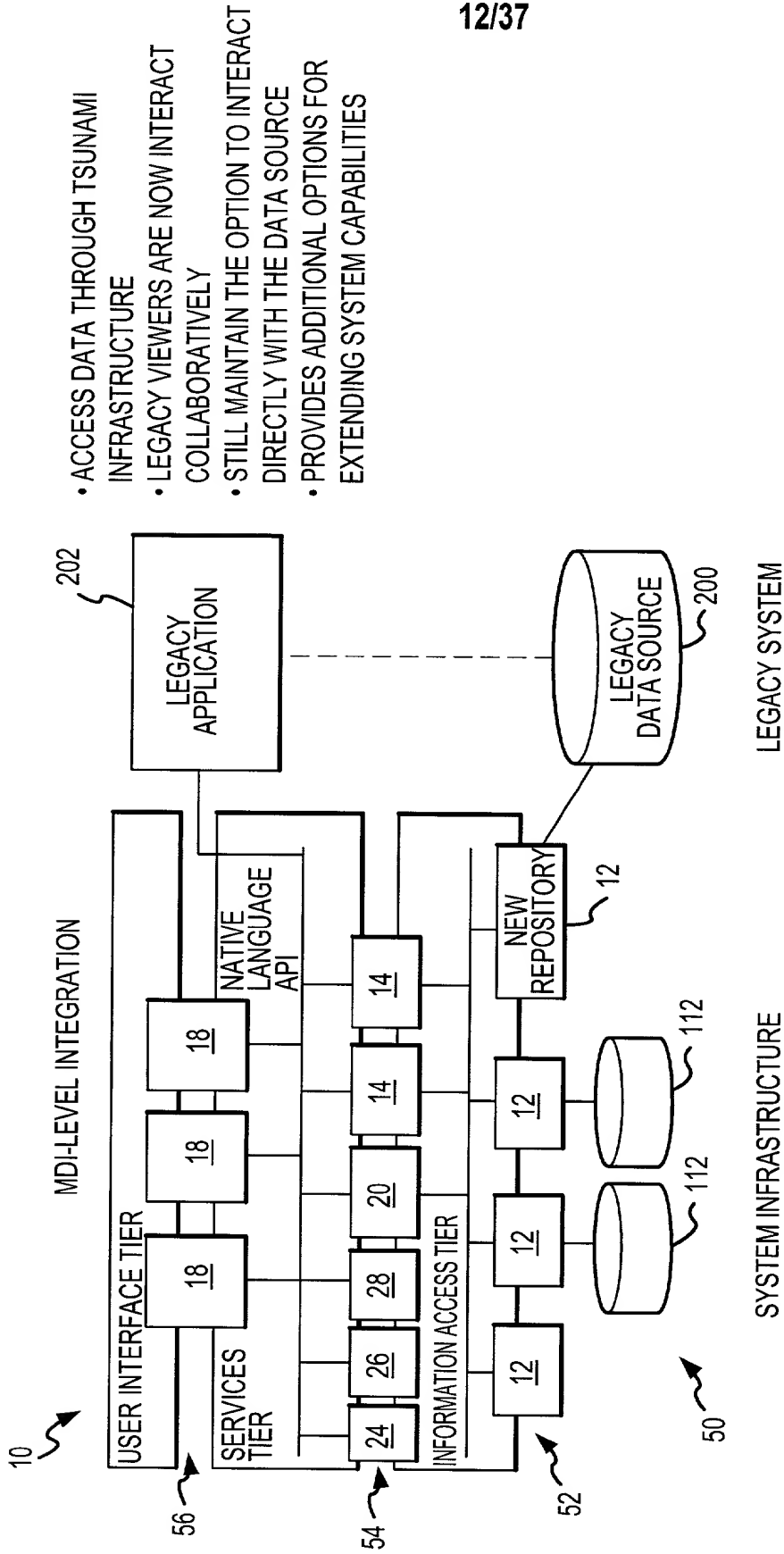
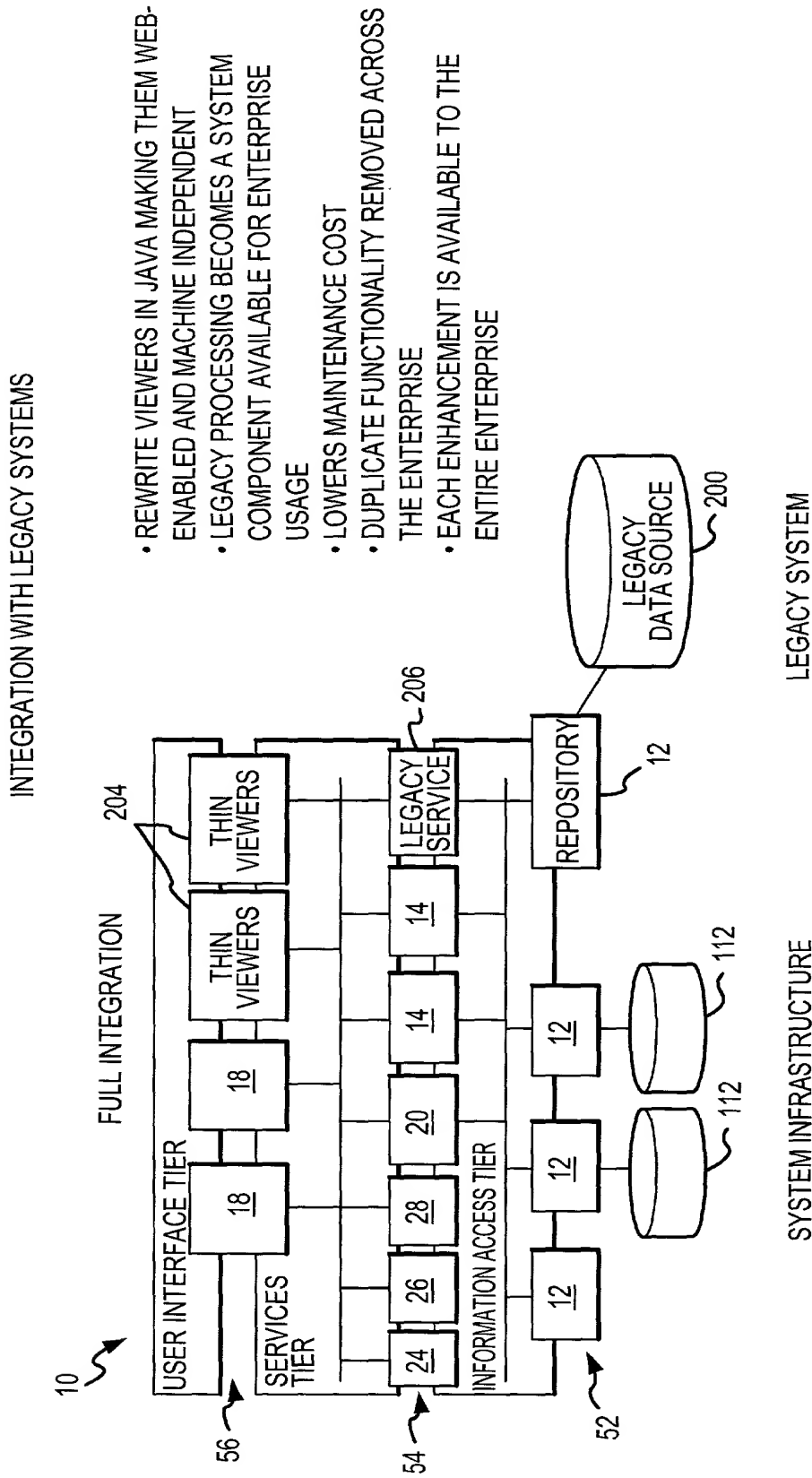


FIG.12

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- REWRITE VIEWERS IN JAVA MAKING THEM WEB-ENABLED AND MACHINE INDEPENDENT
- LEGACY PROCESSING BECOMES A SYSTEM COMPONENT AVAILABLE FOR ENTERPRISE USAGE
- LOWERS MAINTENANCE COST
- DUPLICATE FUNCTIONALITY REMOVED ACROSS THE ENTERPRISE
- EACH ENHANCEMENT IS AVAILABLE TO THE ENTIRE ENTERPRISE

FIG.13

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IMPORTANCE OF DATA-CENTRIC COLLABORATION FRAMEWORK

- FRAMEWORK IS APPLICABLE TO MOST DOMAINS
- SMALL TOOLS EXTEND OVERALL CAPABILITY
 - BUILD DOMAIN OR ANALYST SPECIFIC TOOLS---NOT SYSTEMS
 - ADDING SINGLE COLLABORATIVE CAPABILITIES RESULTS IN EXPONENTIAL GROWTH OF OVERALL SYSTEM CAPABILITY
- COLLABORATION INTEGRAL TO FRAMEWORK
 - INSTEAD OF PASTING IMAGES ONTO A WHITEBOARD, COLLABORATE ON THE TOOL ITSELF USING WHITEBOARDING LAYER
- SUPPORTS LEGACY APPLICATIONS
 - NO SPECIAL LOGIC NEEDED IN TOOLS TO SUPPORT COLLABORATION
 - DATA IS SHARED AND NOT REPLICATED, SO CHANGES TO THE DATA BY LEGACY TOOLS PROPAGATE TO COLLABORATIVE TOOLS.

FIG.14

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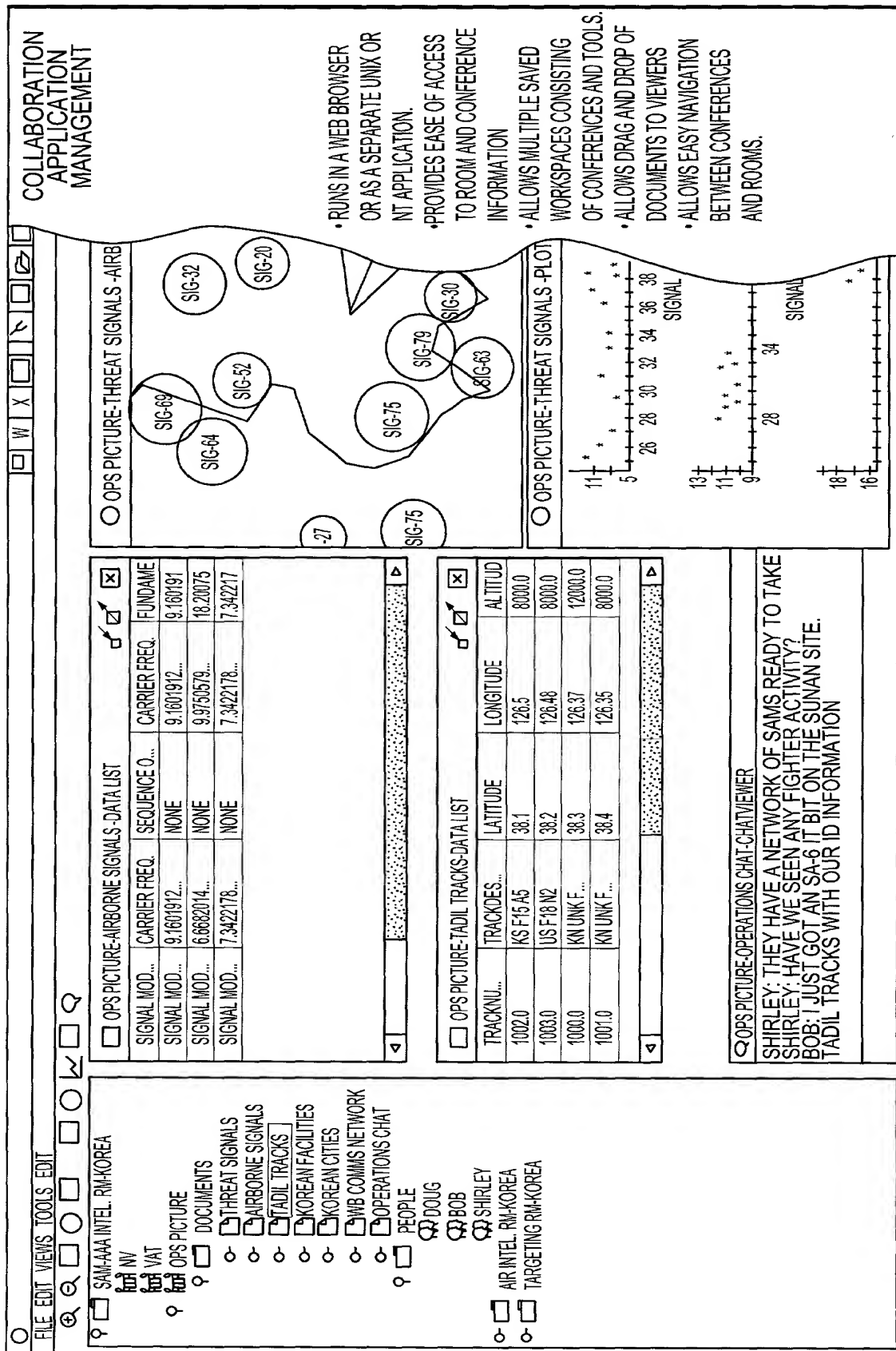


FIG.15

COLLABORATIVE
APPLICATION
MANAGEMENT

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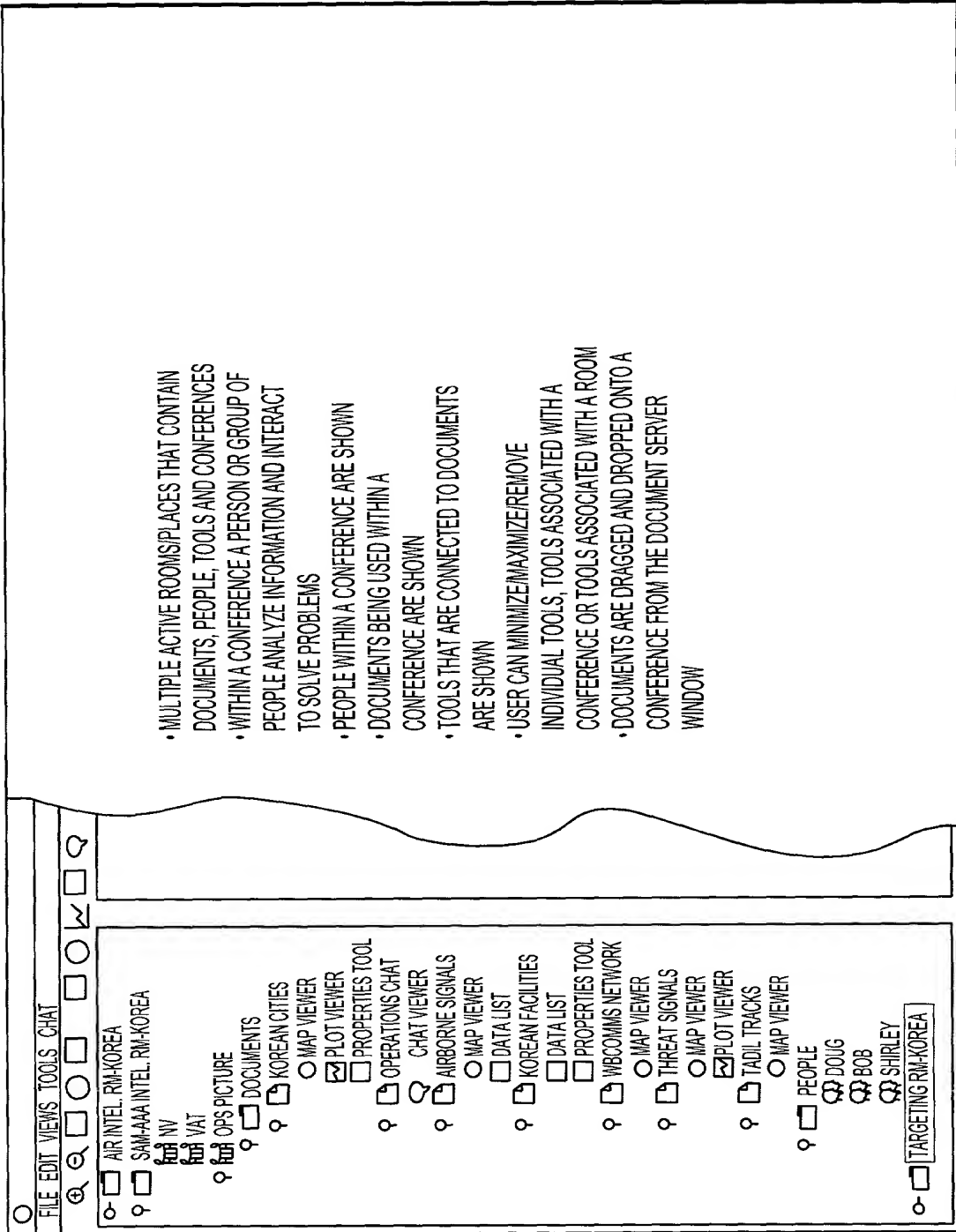


FIG.16

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DYNAMIC REPOSITORY QUERY & DOCUMENT MANAGEMENT

NEW STANDING QUERY DOCUMENT

NAME: THREAT SIGNALS

FEATURE TYPE: SIGNAL

☐ SIGNAL INFORMATION

☒ SIGNAL MODULATION MODE INFORMATION

☒ RF

☐ CARRIER FREQUENCIES
 ☐ SEQUENCE OF RF'S
 ☐ CARRIER FREQUENCY STATS
 ☐ FUNDAMENTAL FREQUENCY SOURCE
 ☐ CARRIER RF TYPE
 ☐ PULSE MODULATION MODE INFORMATION

☐ CARRIER RF TYPE DIALOG

☐ PULSE CONSTANT RF
 ☐ PULSE SIMULTANEOUS RFS
 ☐ PULSE SEQUENTIAL RFS
 ☐ PULSE TO PULSE RANDOM RF
 ☐ PULSE TO PULSE PERIODIC RF
 ☐ PULSE TO PULSE ADAPTIVE RF
 ☐ BURST TO BURST AGILE RF

OK CANCEL

NEW STANDING QUERY DOCUMENT

NAME: CITIES

FEATURE TYPE: CITIES

☐ ROW

☐ CITYCODE
 ☐ PLACECODE
 ☐ NAME
 ☐ STATE
 ☐ COUNTRY RANGE KOREA-KOREA
 ☐ LATITUDE
 ☐ LONGITUDE
 ☐ COUNTRY DIALOG

☐ MIN KOREA
 ☐ MAX KOREA

OK CANCEL

FOLDER BROWSER

☐ DOUG'S PERSONAL FOLDER
 ☐ RICH'S PERSONAL FOLDER
 ☐ SCOTT'S PERSONAL FOLDER
 ☐ ANNE'S PERSONAL FOLDER
 ☐ TREBOR'S PERSONAL FOLDER
 ☐ SHIRLEY'S PERSONAL FOLDER
 ☐ BOB'S PERSONAL FOLDER
 ☐ JEFF'S PERSONAL FOLDER
 ☐ KURT'S PERSONAL FOLDER
 ☐ TARGETING RM-KOREA CONTEXT
 ☐ SAM-AAA INTEL RM-KOREA C
 ☐ AIR INTEL RM-KOREA CONTEXT

☐ THREAT SIGNALS
 ☐ KOREAN CITIES
 ☐ KOREAN INSTALLATIONS
 ☐ AIRBORNE SIGNALS
 ☐ TADIL TRACKS
 ☐ WBCOMMSNET

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- DYNAMICALLY LEARNS ABOUT REPOSITORY
- GETS ATTRIBUTE METADATA FROM REPOSITORY
- CREATES AGENT REPRESENTING STANDING QUERY
- RESULTS BECOME A DOCUMENT WHICH MAY BE USED FOR COLLABORATION

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FIG.17

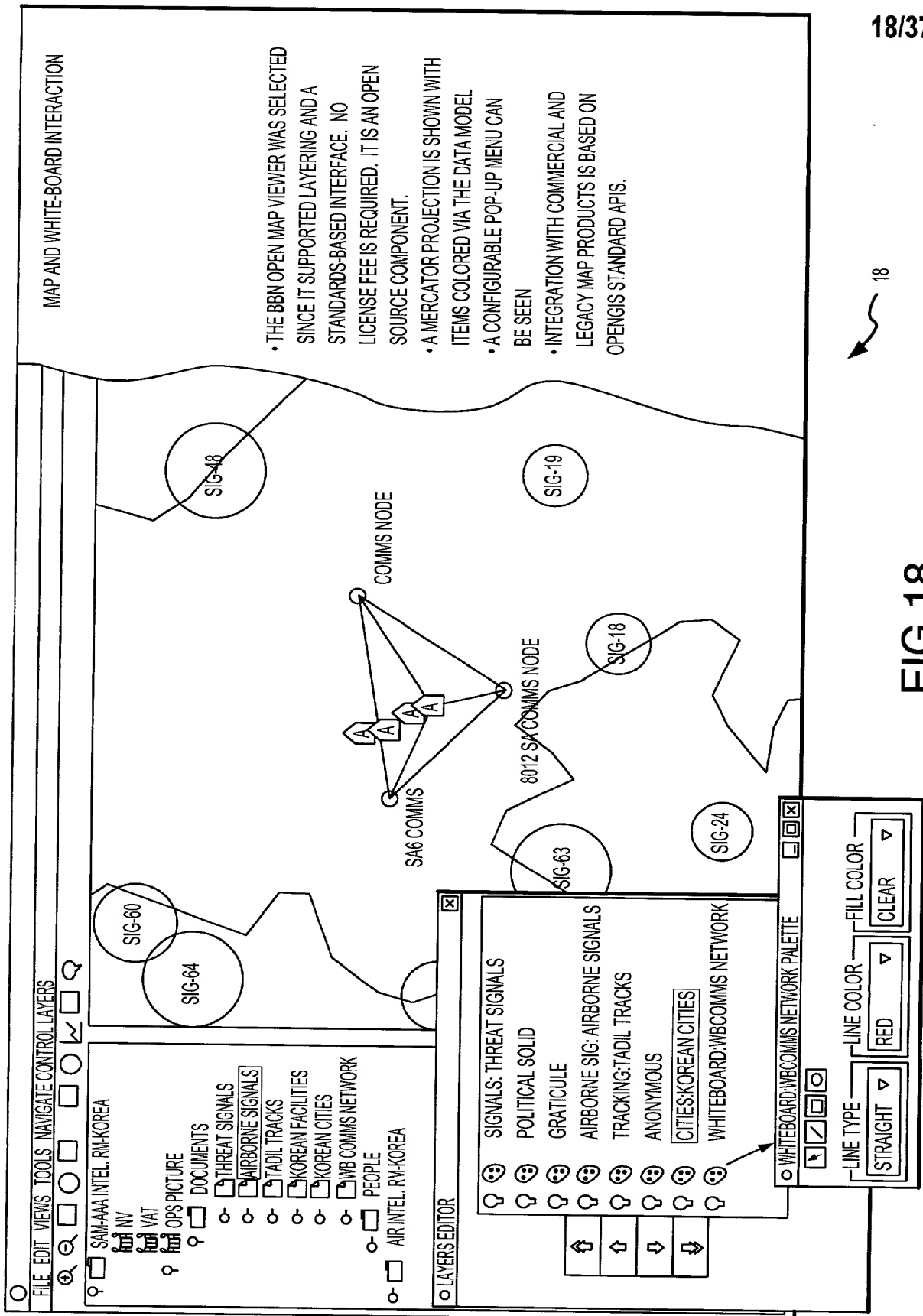


FIG.18

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EXTENDED PROPERTIES EDITOR

- DYNAMICALLY LEARNS INFORMATION SCHEMA FROM REPOSITORY
- ATTACHES EXTENDED PROPERTIES DATA IN THE DATA CHANNEL
- APPLIED RULES RUN AS AGENTS WITHIN THE CHANNEL
- EXTENDED PROPERTIES
 - COLOR
 - HIGHLIGHT
 - VISIBILITY
 - LABEL
 - SYMBOL
 -

OPS PICTURE-KOREAN FACILITIES-PROPERTIES TO

COLOR-BY SYMBOL-BY VISIBILITY-BY

PROPERTY: THREAT

FILTER: RANGE[0-2] RANGE[10-10] RANGE[3-6] RANGE[7-9]

EDIT FILTER RULES

THREAT RANGE MIN 10 MAX 12

COLOR FOR THIS RANGE

SWATCHES HSB RGB

RECENT:

PREVIEW

SAMPLE TEXT SAMPLE TEXT

SAMPLE TEXT SAMPLE TEXT

SAMPLE TEXT SAMPLE TEXT

DEFAULT COLOR

NEW EDIT DELETE

OK CANCEL

FIG.19

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X-Y PLOTTER

- SELECT X AND Y ATTRIBUTES FROM LIST PROVIDED BY REPOSITORY
- RE-ORDER DISPLAYS
- ZOOM/PAN IN ANY DISPLAY INDEPENDENTLY OR DEPENDENTLY

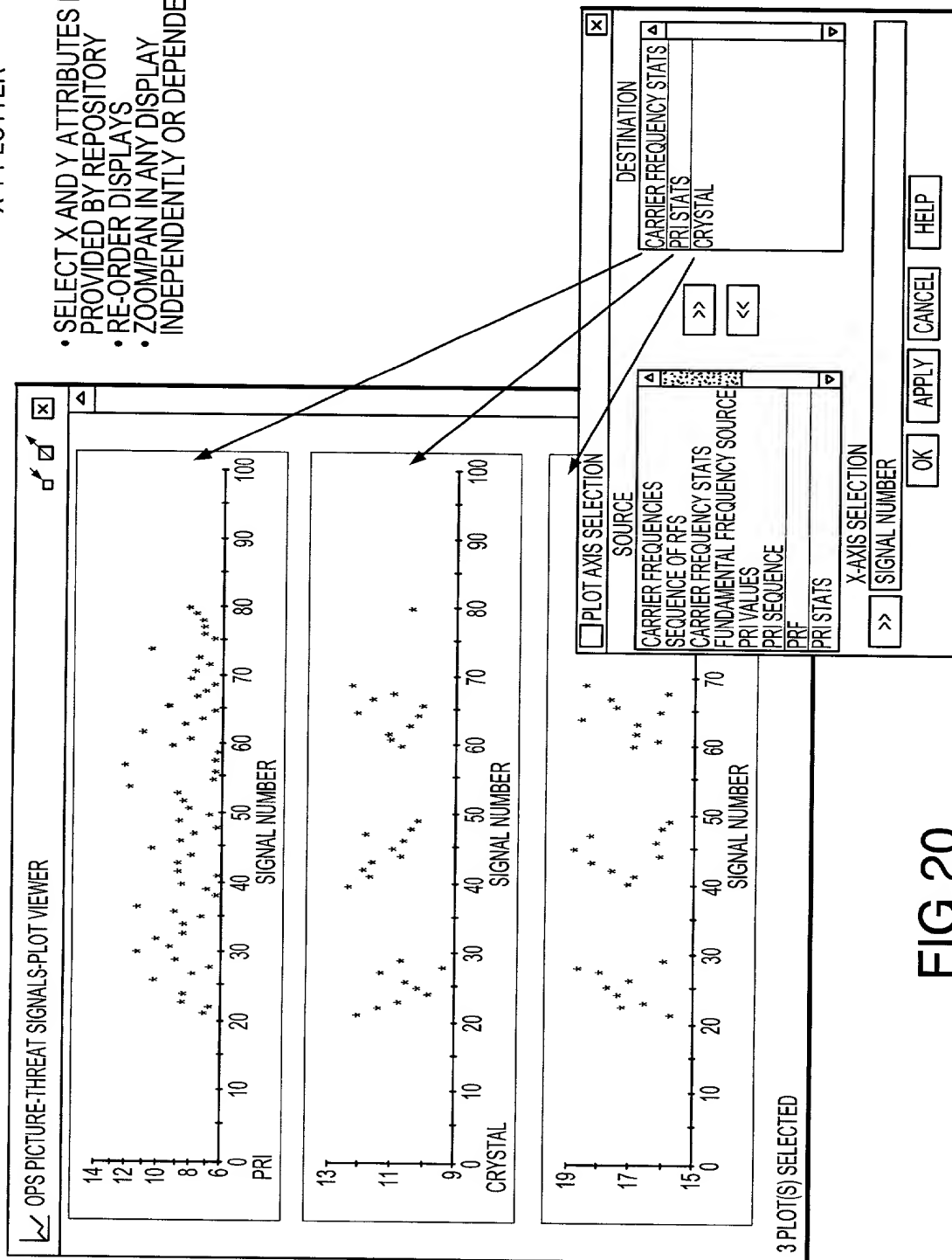


FIG.20

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LIST VIEWER

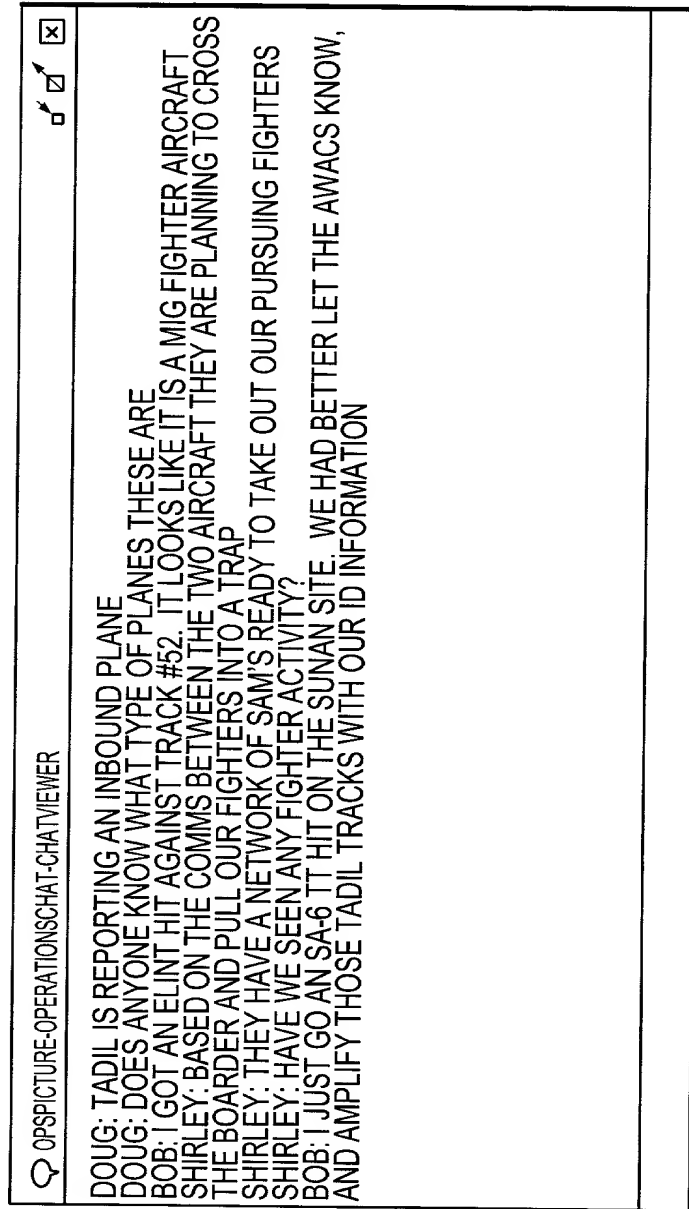
- SORTING
- ROW SELECTION
- ROW COLORING
- ROW HIDING
- CHOOSE ATTRIBUTES TO VIEW

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OPSPICTURE-KOREANFACILITIES-DATALIST						☐	☑	✕
SITECODE	NAME	COUNTRY	LATITUDE	LONGITUDE	THREAT			
KN00657	CHOOK	KN	39.233333	127.05	3			
KN00561	CH'ILTAE	KN	39.466667	127.05	6			
KN00017	P'ALBONG	KN	39.416667	127.066667	4			
KN00492	CH'ANGMOK	KN	39.433333	127.066667	5			
KN00250	ISDU	KN	39.562315	127.083333	8			
KN00228	PYONGSAN	KN	39.233333	127.1	0			
SC00002	232 AIR CO	KN	38.4	127.1	10			
KN00380	PYONGPUN	KN	39.983333	127.133333	4			
KN00227	PYONGSANG	KN	39.966667	127.166667	6			
KN00241	PAEAM	KN	39.683333	127.183333	5			
KN00242	PAEBAWL	KN	39.683333	127.183333	4			
KN00250	CHOOOMIN	KN	17.430562	127.9	8			
KN00296	PAEK'KONG	KN	38.466667	126.566667	1			
KN00478	CH'ANGGYE	KN	39.466667	126.566667	2			
KN00044	P'ANMUJU	KN	37.895555	126.564555	8			
KN00045	RASDASS	KN	38.956546	127.566667	7			
KN00292	PAEKHWAD	KN	37.95	126.583333	6			
KN00425	CH'AERYON	KN	37.833333	126.6	2			
KN00257	PAEGO	KN	38.433333	126.6	1			
KN00521	CH'ARYONG	KN	39.366667	126.6	2			
SC00004	BQ12VSA	KN	37.8	126.6	10			
KN00030	PANCH'ON	KN	37.8	126.633333	5			
KN00712	CHODEDAM	KN	39.56	126.633333	7			
KN00019	PALCHACH'ON	KN	37.966667	126.633333	3			
KN00323	PAKTONGUM	KN	37.933333	126.65	4			
KN00103	PONGAM	KN	38.965333	126.65	8			
KN00493	CH'ANGNAE	KN	37.833333	126.666667	4			
KN00195	PYONGCH'A	KN	37.916667	126.666667	4			

FIG.21

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CHAT TOOL

- CHAT SUPPORTS MULTIUSER CONVERSATIONS FROM MULTIPLE CONFERENCES IN MULTIPLE CONTEXTS
- PEOPLE CONNECT TO A DOCUMENT AND COMMUNICATE
- PEOPLE IN THE SAME CONFERENCE SEE THE SAME VISUALIZATION PROPERTIES LIKE COLOR AND VISIBILITY OF PARTICIPANTS INPUTS
- CONVERSATIONS ARE PERSISTENT OVER TIME

FIG.22

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PERFORMANCE METRICS

The diagram illustrates a system architecture with the following components and performance metrics:

- Participant Server**: Connected to **Desktop Services (Browser, CDE, Windows)** via **LOGIN/DESKTOP 8SEC.**
- Context Server**: Connected to **Desktop Services** via **JOIN CONTEXT 1.5SEC** and **CREATE CONF. 4SEC**.
- Document Server**: Connected to **Desktop Services** via **QUERY & CREATE DOC. 0.02SEC**.
- Desktop Services (Browser, CDE, Windows)**: The central hub for user interaction.
- Map Viewer (JAVA)**: Connected to Desktop Services, with a **0.37SEC** operation time and a **0.1SEC** refresh time.
- List Viewer (JAVA)**: Connected to Desktop Services, with a **0.6SEC** operation time and a **<0.1SEC 30 HIGHLIGHTS** refresh time.
- X-Y Viewer (JAVA)**: Connected to Desktop Services, with a **0.1SEC** operation time.
- Chat Viewer (JAVA)**: Connected to Desktop Services, with a **0.5SEC** operation time.
- Signal Data Channel (JAVA)**: Connected to Desktop Services, with a **0.5SEC** operation time.
- Cities Data Channel (JAVA)**: Connected to Desktop Services, with a **0.5SEC** operation time.
- Chat Data Channel (JAVA)**: Connected to Desktop Services, with a **0.4SEC** operation time.
- Signal Repository (JAVA)**: Connected to Desktop Services, with a **1.1SEC** operation time.
- Cities Repository (JAVA)**: Connected to Desktop Services, with a **1.1SEC** operation time.
- Chat Repository (JAVA)**: Connected to Desktop Services.
- Cities Database (ORACLE)**: Connected to the Cities Repository (JAVA).

The system is connected to the **INTRANET/INTERNET** and utilizes the **COLLABORATIVE SERVICES FRAMEWORK (CORBA)** and **INFORMATION ACCESS SERVICES FRAMEWORK (CORBA)**.

FIG. 23

FIG. 23

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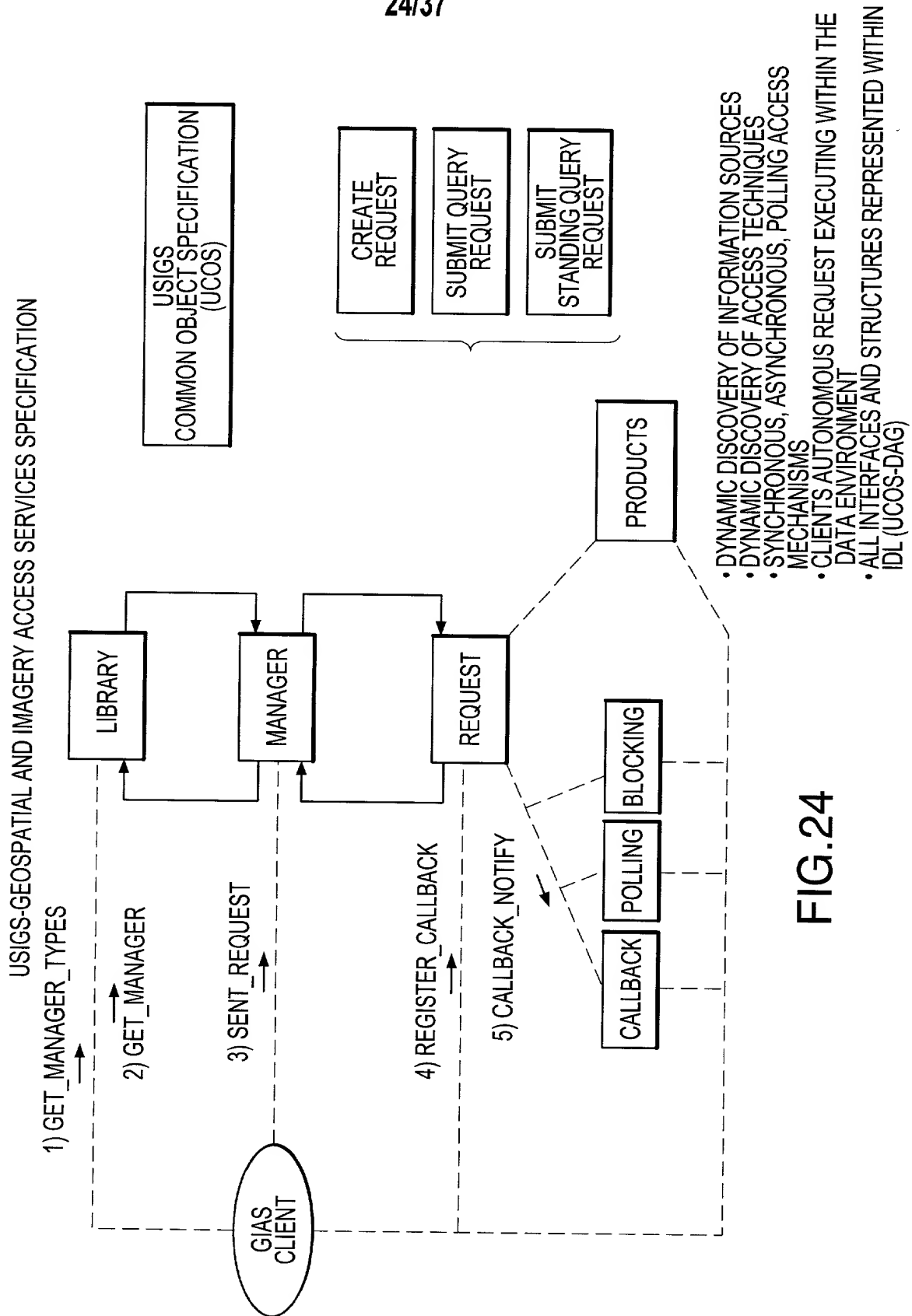




FIG. 25

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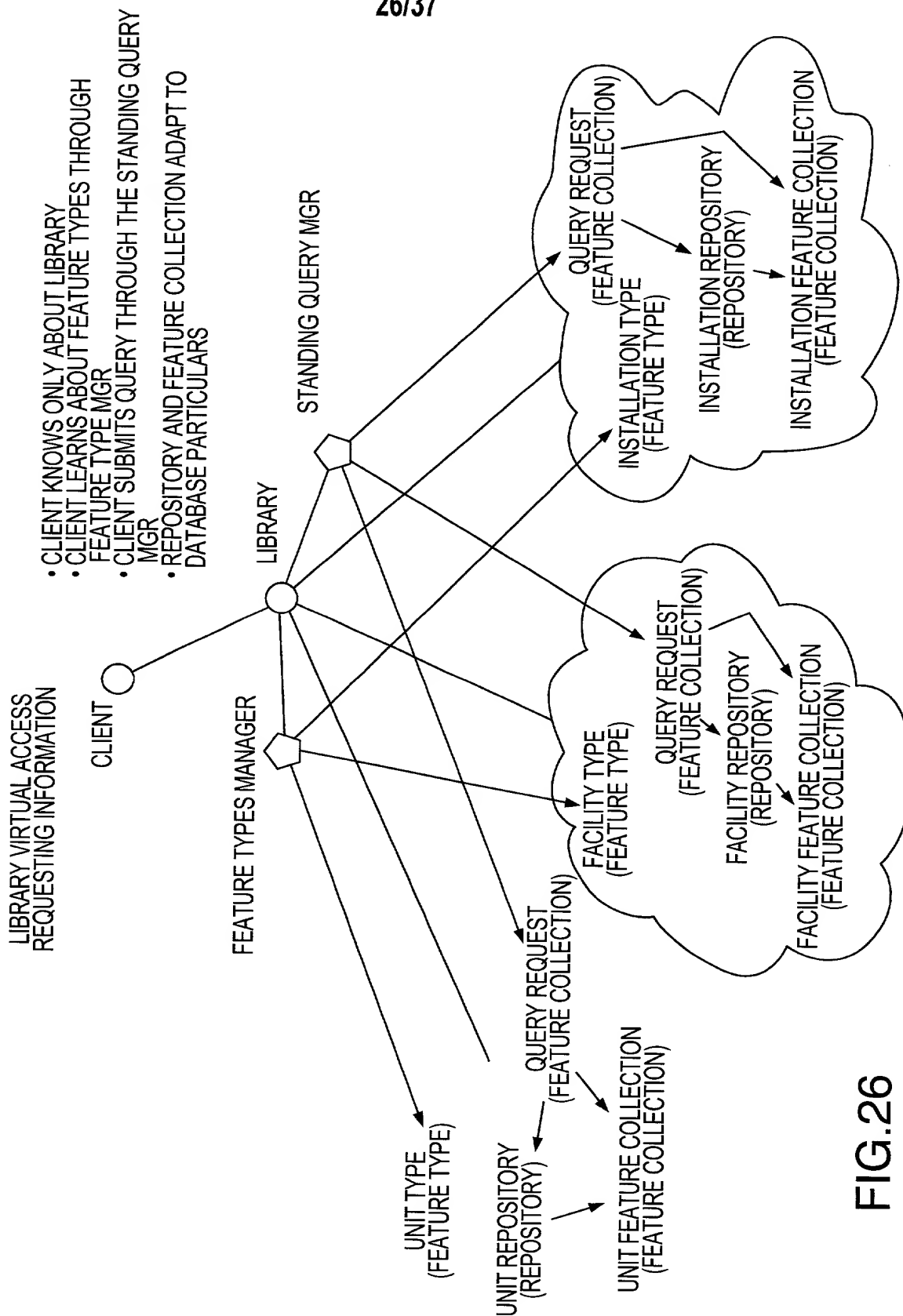
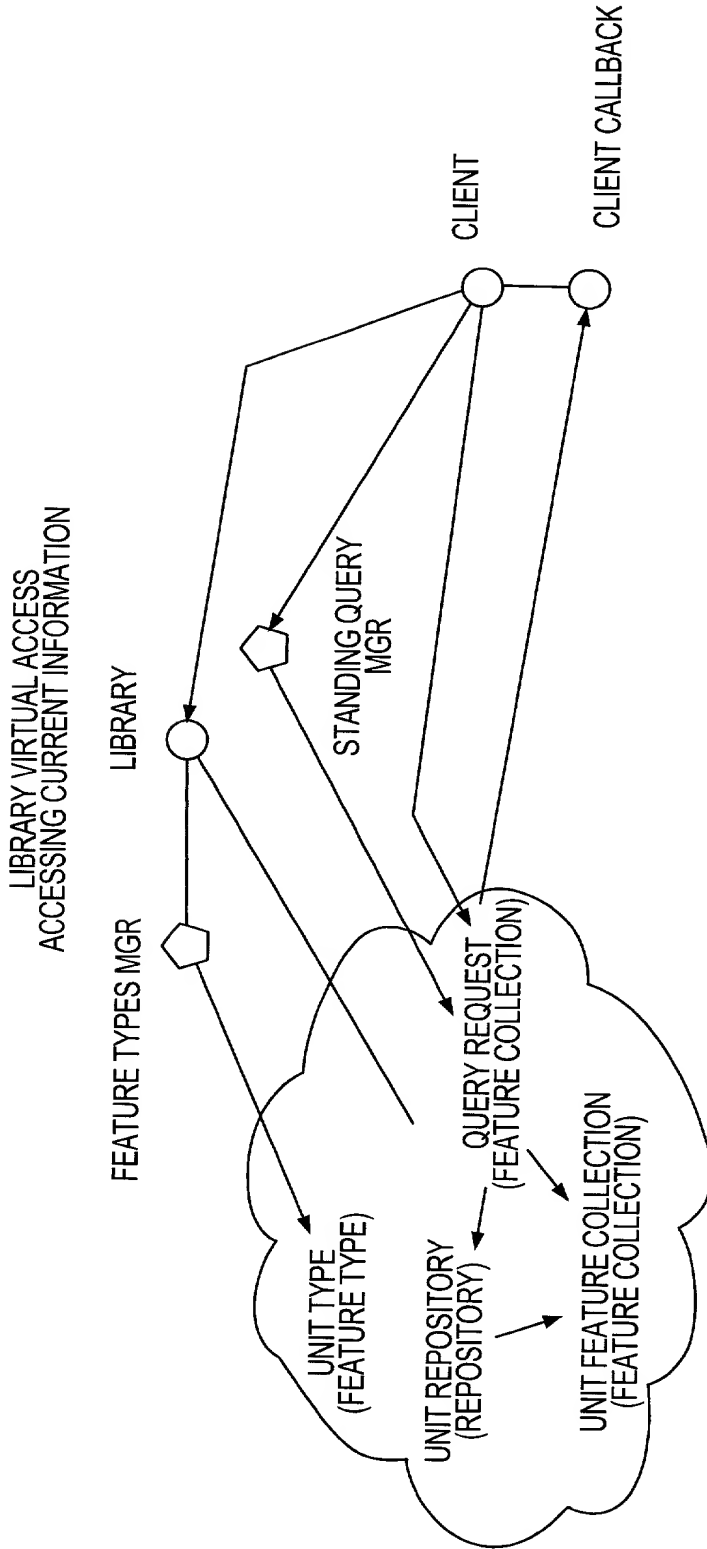


FIG.26

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- CLIENT LEARNS ABOUT STANDING QUERY MGR THROUGH LIBRARY
- QUERY MANAGER RETURNS A REFERENCE TO A REQUEST OBJECT FOR EACH CLIENT QUERY METHOD INVOCATION
- CLIENT INTERACTS WITH REQUEST FOR QUERY CONTROL AND STATUS
- REQUEST SUPPORTS SYNCHRONOUS, POLLING, AND A-SYNCHRONOUS CLIENT INTERFACES. CLIENT CALLBACK IS USED FOR A-SYNCHRONOUS FEEDBACK ON QUERY STATE

FIG.27

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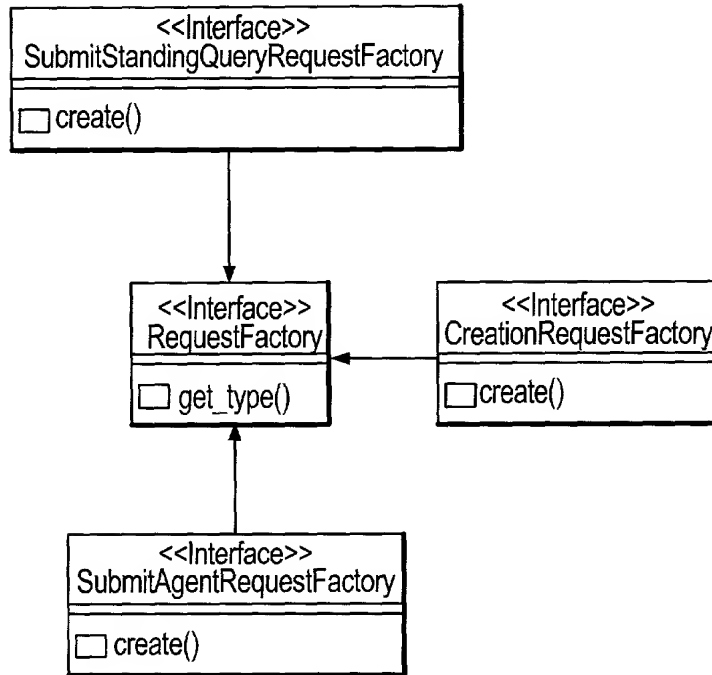


FIG.28

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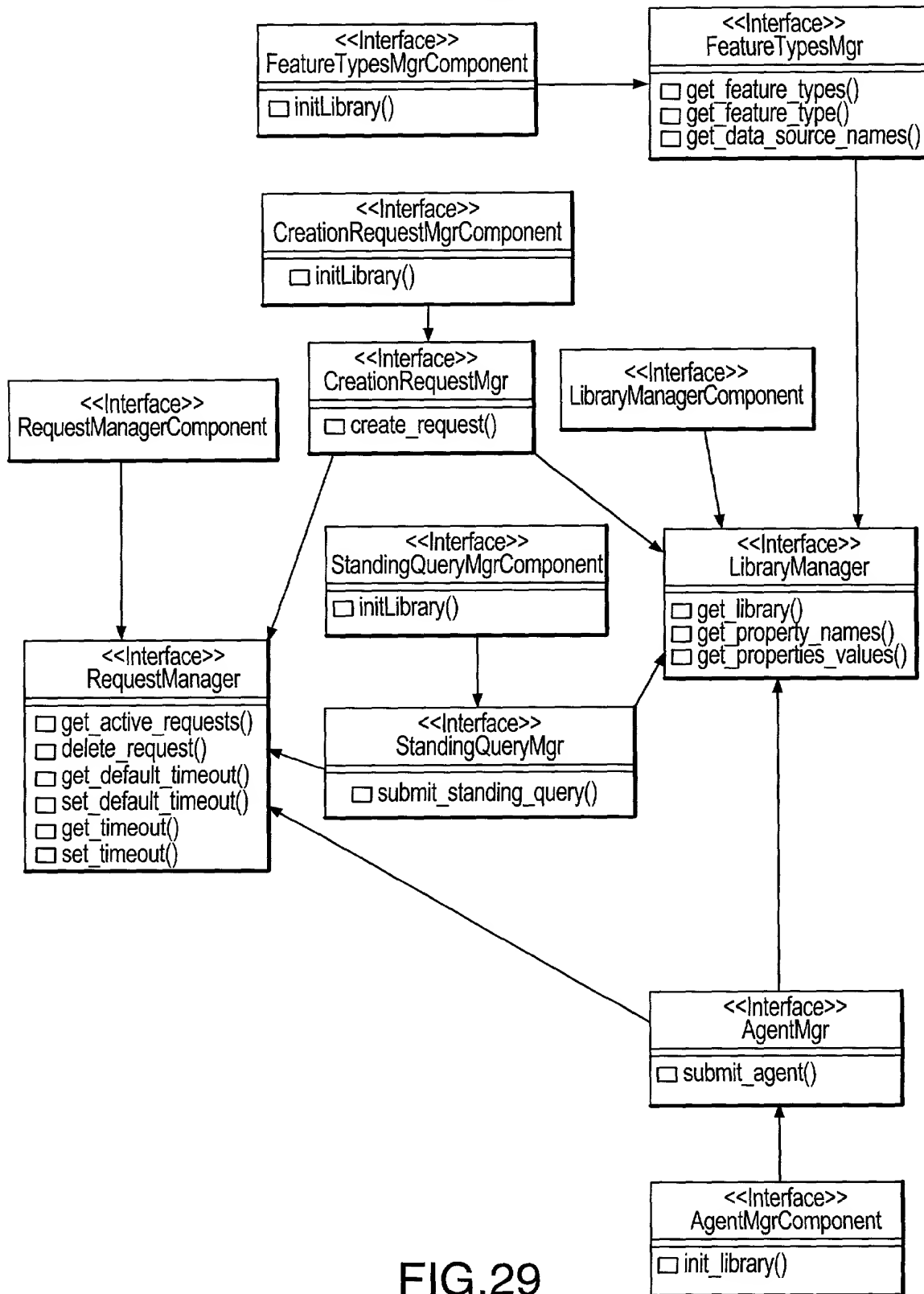


FIG.29

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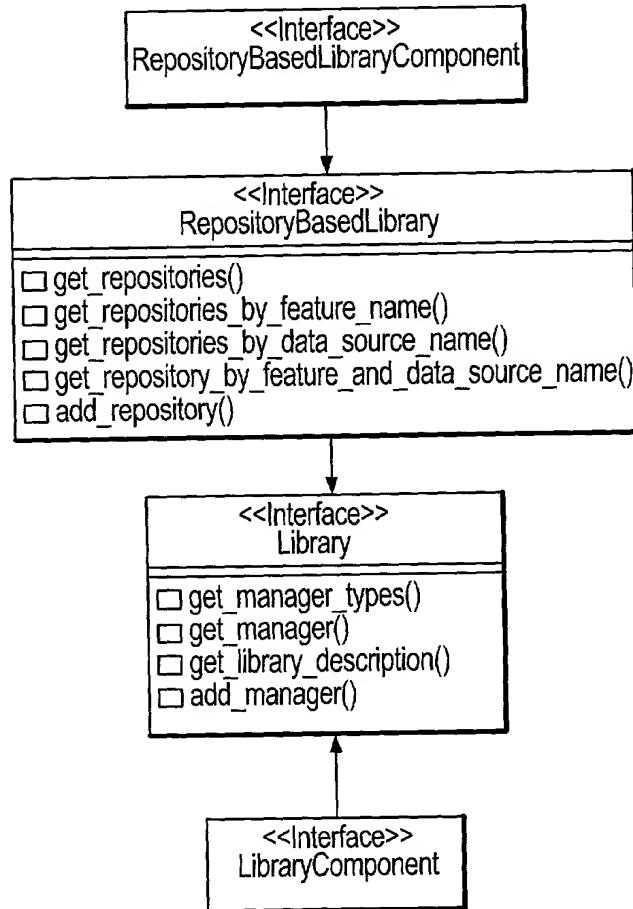


FIG.30

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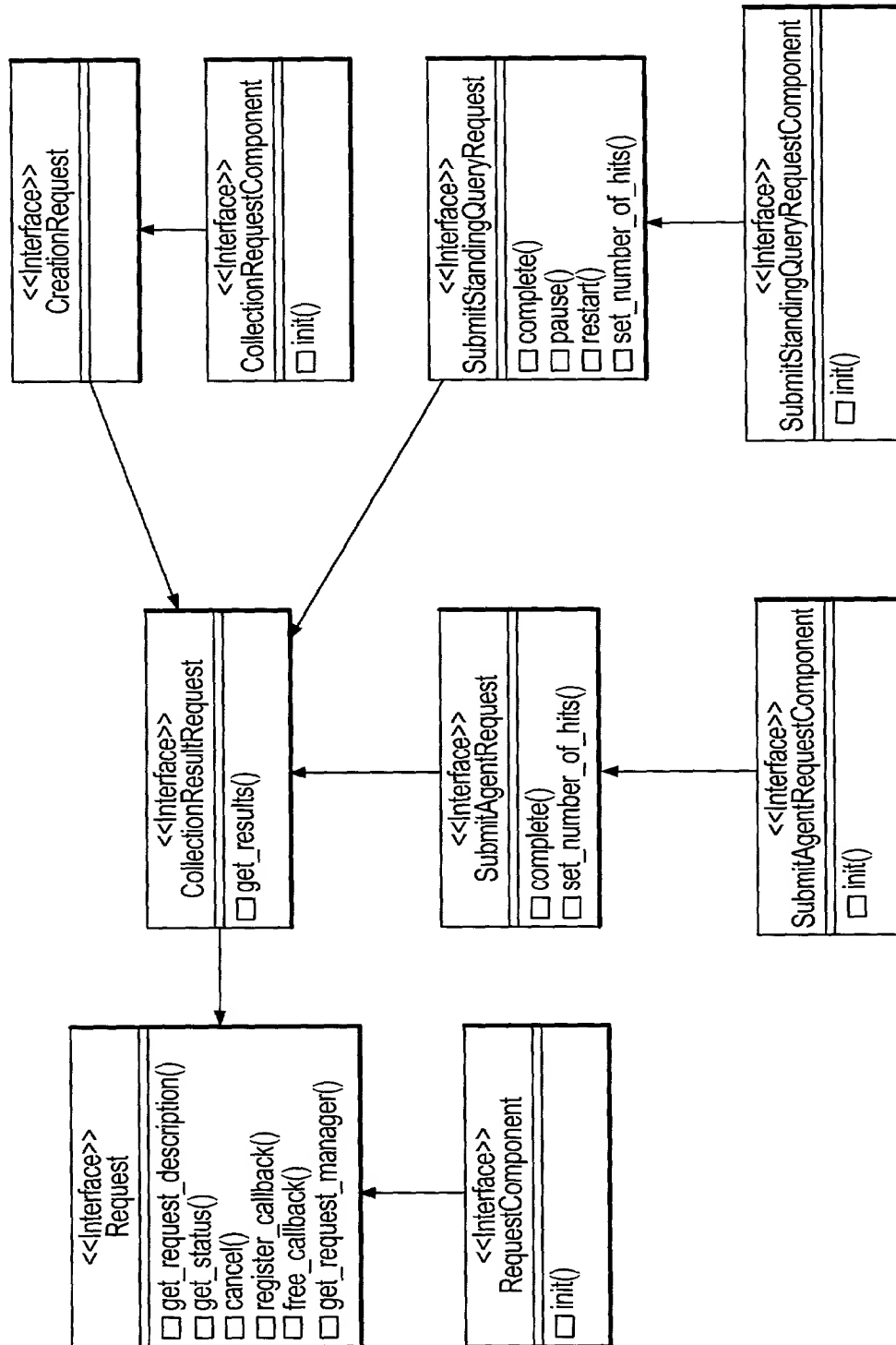


FIG.31

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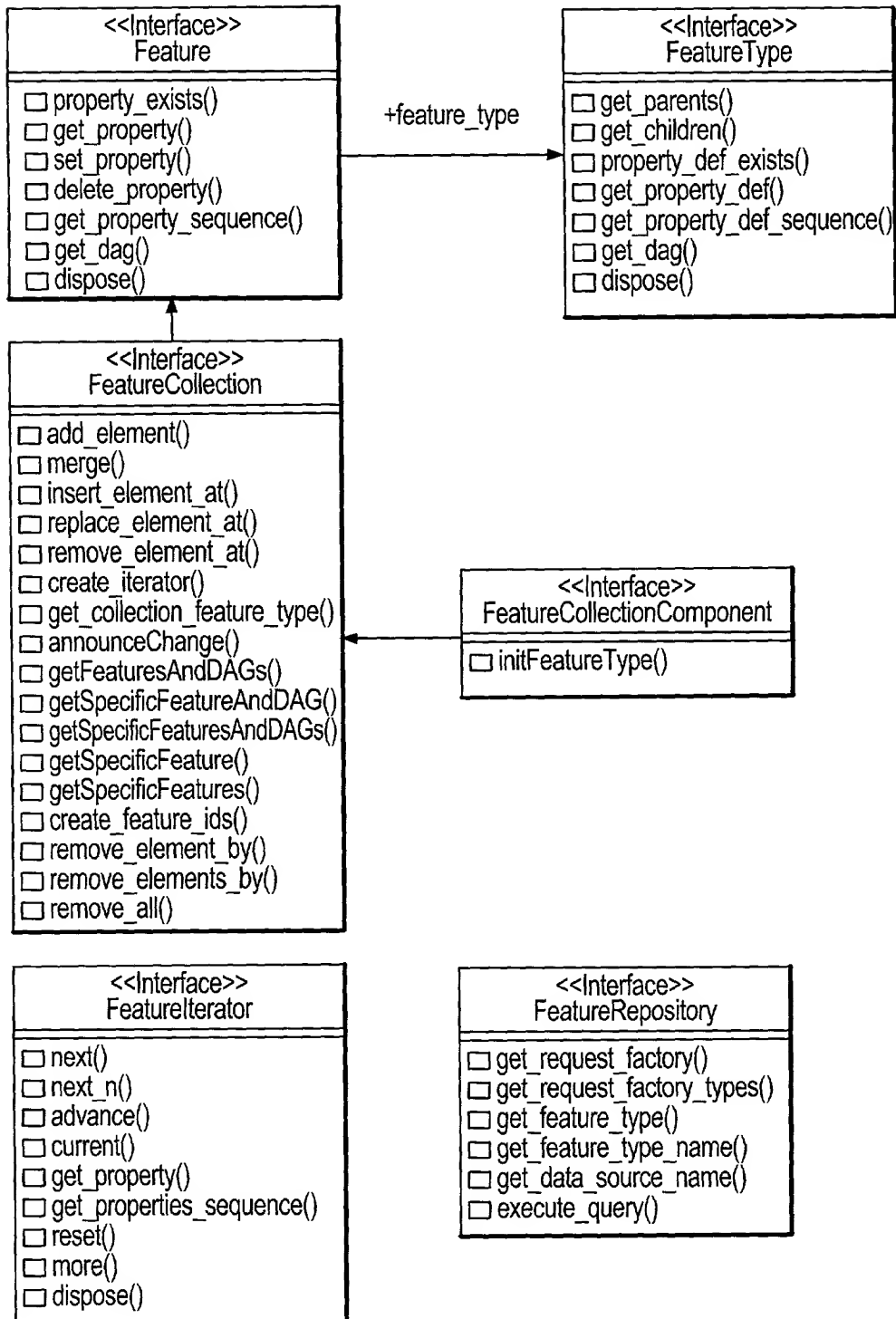
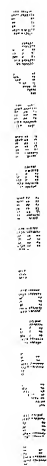


FIG.32

[illegible][illegible]

VERSIONING DATA CHANGES IN THE DATA CHANNEL

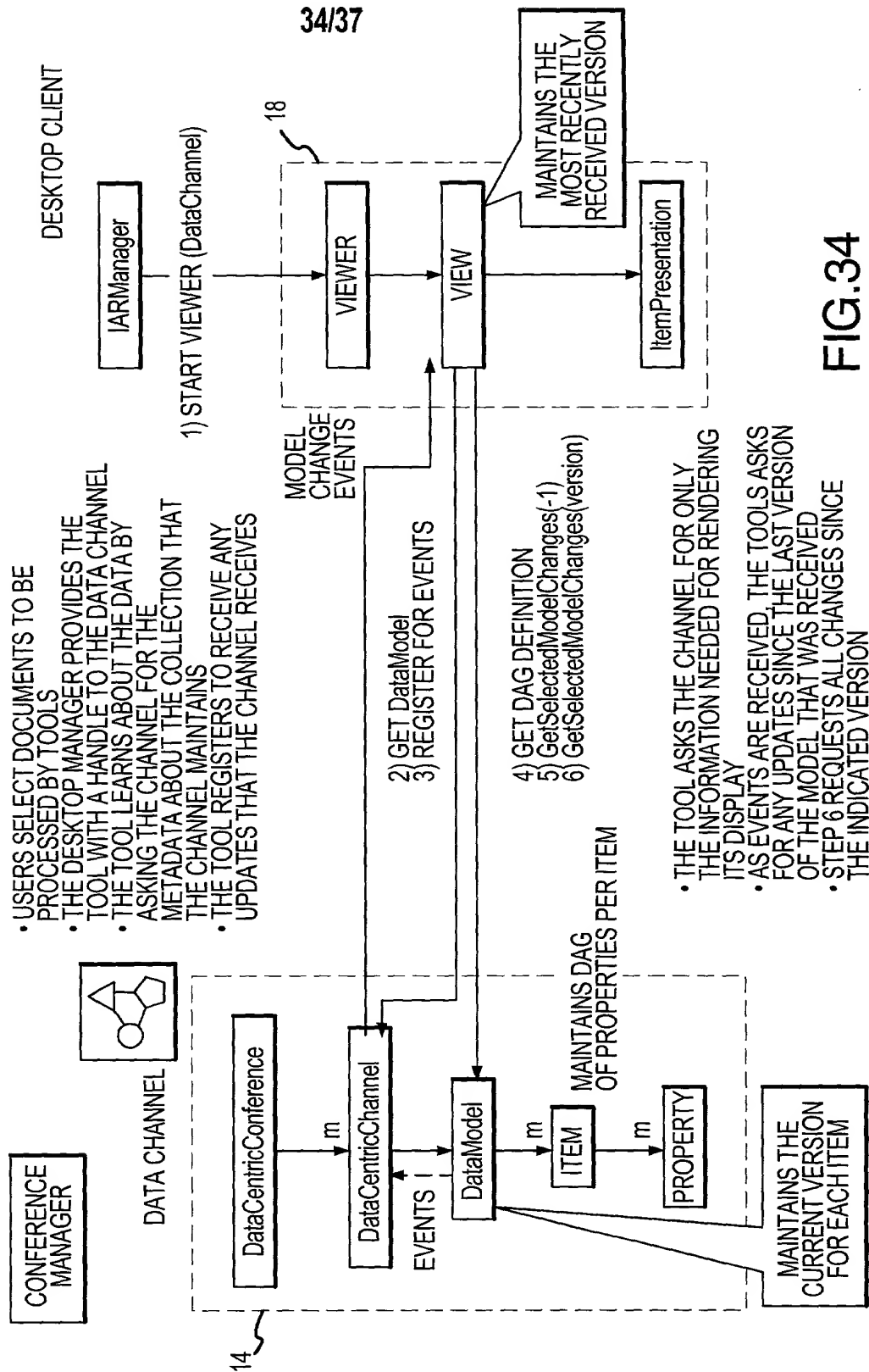


FIG.34

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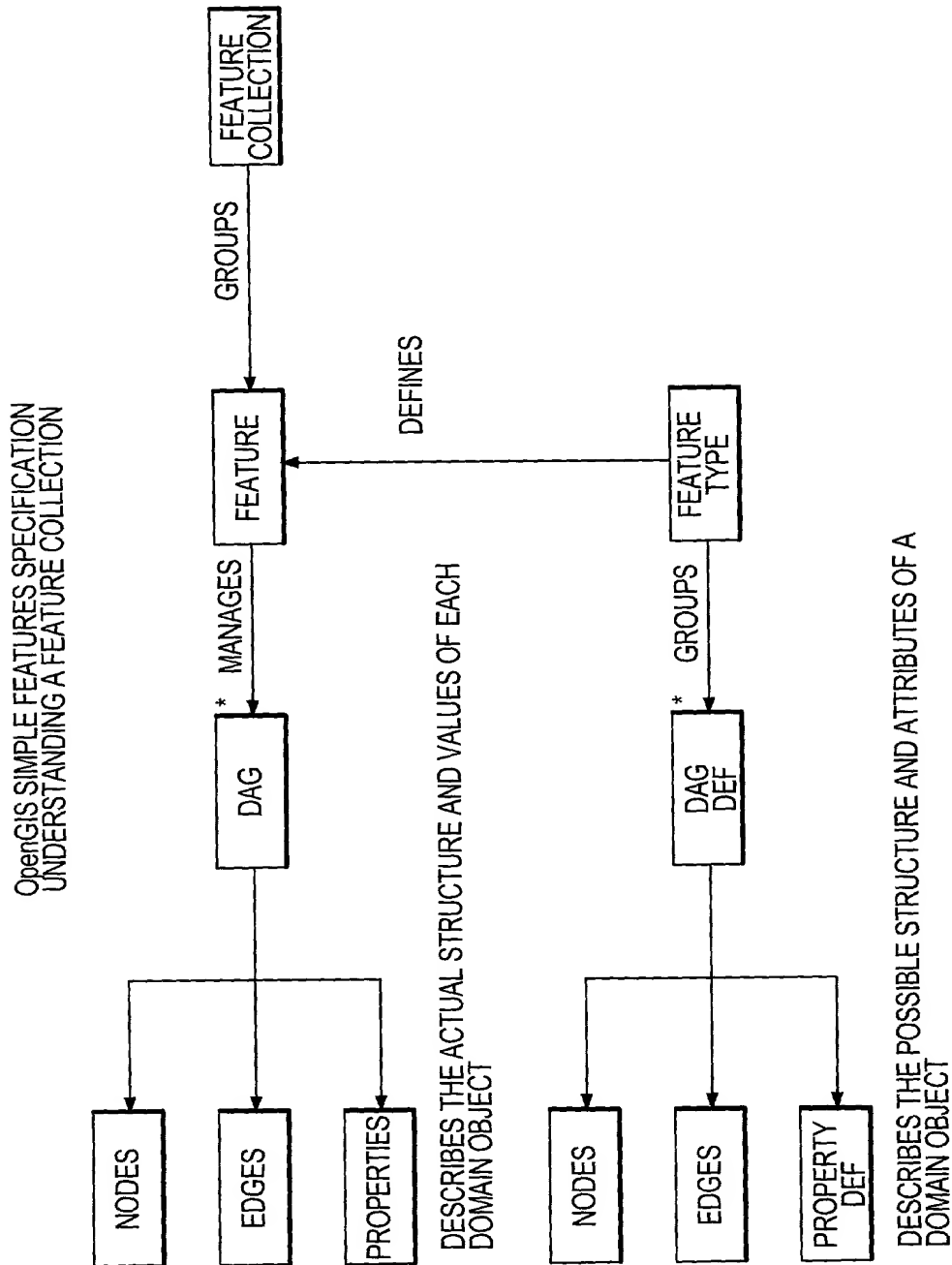


FIG.35

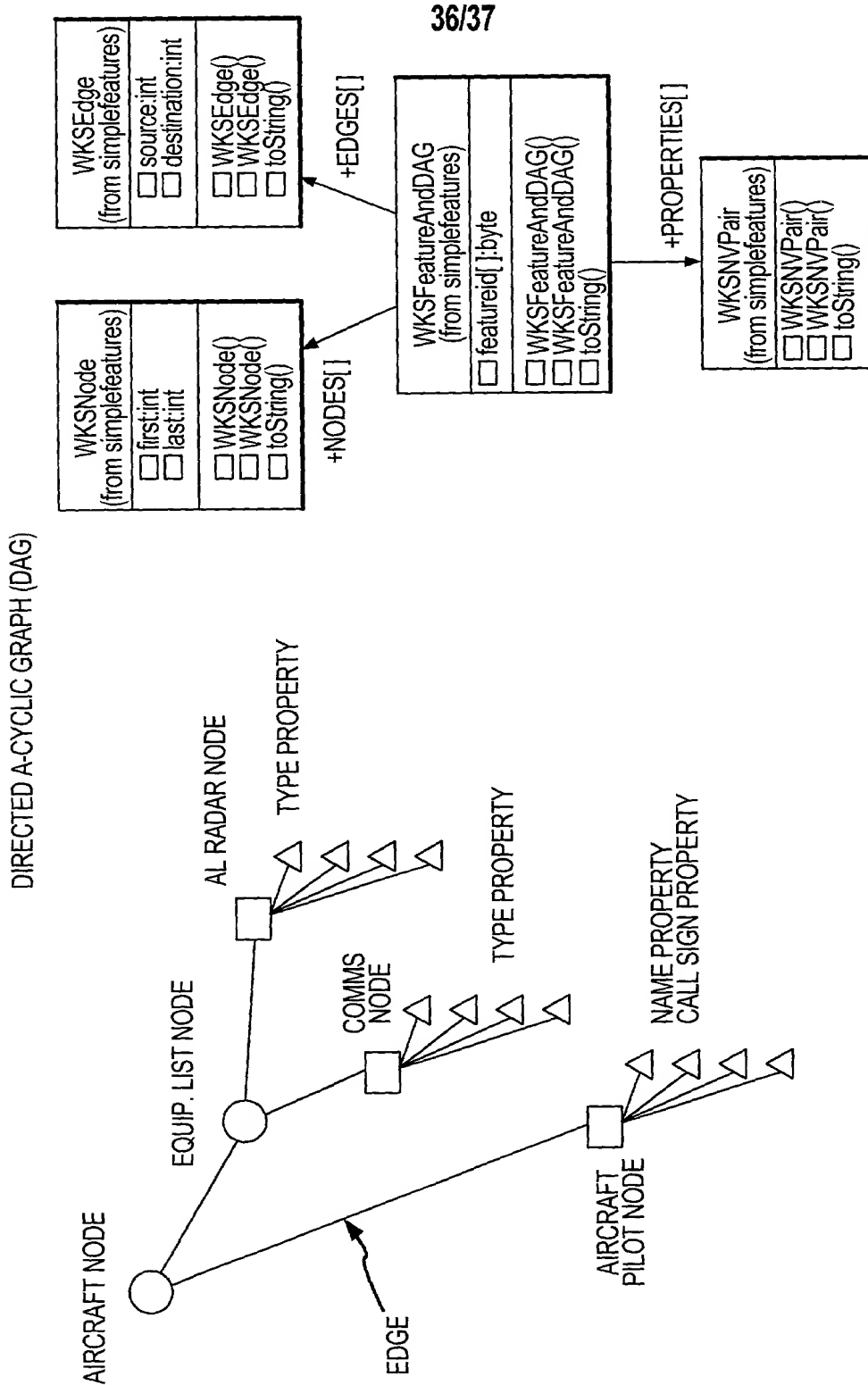


FIG.36

